Since 1963

ISSC®

a division of Kanson Electronics, Inc.

Solid State Timer and Control Component Catalog

"TIMING IS EVERYTHING"

www.issc-kanson.com/ **1-800-233-9354**

Kanson Electronics, Inc.

Proudly Made in America

We build the best timers and sensors on the market right here in the USA, and we stand behind them. ***Powder coated steel enclosures, Zinc plated base plates, Stainless steel screws,*** are a few of the items that help set us apart from everyone else. We will outlast and outperform anyone on the market, and help to improve your products.

Your success is our business.

1017-SP7
Utility Industry on delay timer with high voltage DC output. Time proven circuitry in a rugged metal can housing, functions reliably in the toughest environments.
See page 8.

PLC watchdog applications.

Many designers are now specifying external watchdog timers in PLC systems. The 1217 motion detector is an ideal selection for this application. It is available with a 24V AC/DC power supply for use in low voltage systems. See page 31.

1248A our popular combination proximity sensor and motion detector in a compact limit switch housing. See page 33.

Analog setting dials, Digital timers, and Counters pages 20 thru 29

DIN style timers in both analog and digital versions.

1232 Resistance detector with built-in time delays, eliminate problems caused by part bounce or poor initial contact. See page 40.

Pushbutton setting controls pages 18 thru 29

800-233-9354 or 931-796-3050 **Fax: 931-796-3956** **www.issc-kanson.com**

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CONTROL COMPONENTS
CONTENTS

TIMING FUNCTIONS

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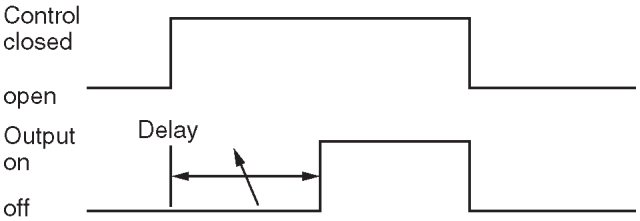
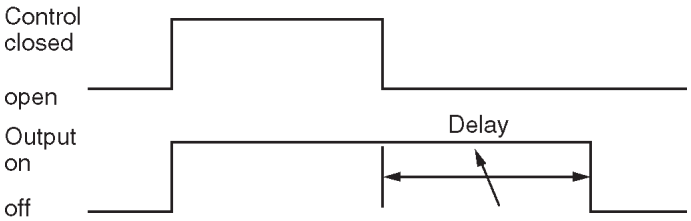
Type 1 - On Delay



Adjustable time delay on energizing

- Closing the control circuit starts the time delay
- Opening the control circuit during timing resets time delay to zero - no accumulation of time delay or false output

Type 2 - Off Delay



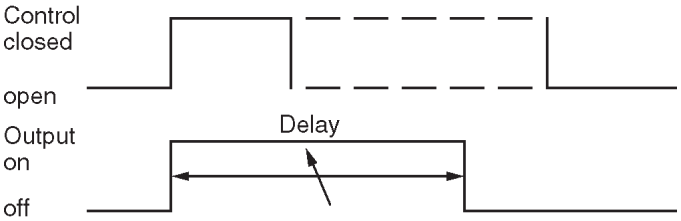
Adjustable time delay on de-energizing

- Closing the control circuit energizes output
- Opening the control circuit starts the time delay Reclosing the control circuit during timing resets time delay to zero no accumulation of time delay or false output

Type 3 - Programmable

User programmable to either On Delay, Off Delay, Pulsed Interval, Maintained Interval or other function

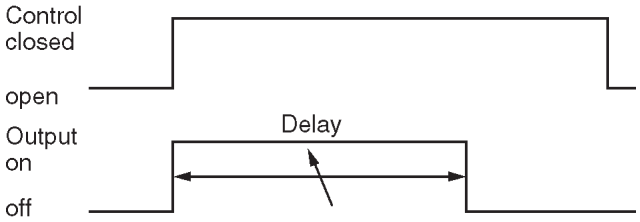
Type 4 - Pulsed Interval



Adjustable time output pulse

- Closing the control circuit initiates timed output pulse
- Opening and closing the control circuit during timing will not effect timing or output

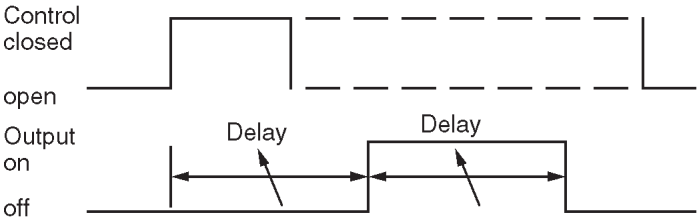
Type 5 - Maintained Interval



Adjustable timed output interval

- Closing the control circuit starts timed output interval
- Opening the control circuit during timing resets time delay to zero and de-energizes output

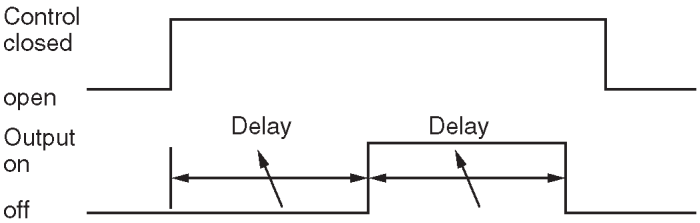
Type 6 - Pulsed Off-On One Cycle



Adjustable dual time delay

- Closing the control circuit initiates timing sequence
- Opening and closing the control circuit during timing will not effect timing or output

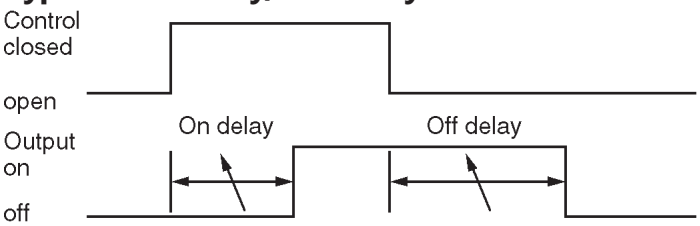
Type 7 - Maintained Off-On One Cycle



Adjustable dual time delay

- Closing the control circuit starts timing sequence
- Opening the control circuit during timing resets both time delays to zero and de-energizes output

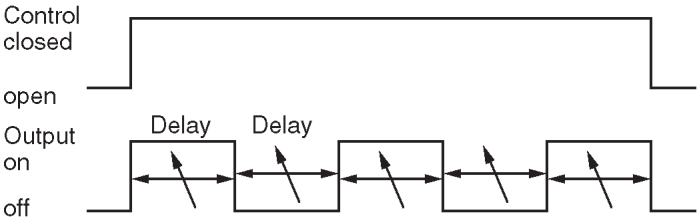
Type 8 - On Delay/Off Delay



Adjustable dual time delay

- Closing the control circuit starts timing sequence
- Combines functions of On Delay and Off Delay into a single timer

Type 9 - Repeat Cycle



Adjustable dual time delay

- Closing the control circuit starts timing sequence
- Opening the control circuit during either timing period resets both time delays to zero and de-energizes output

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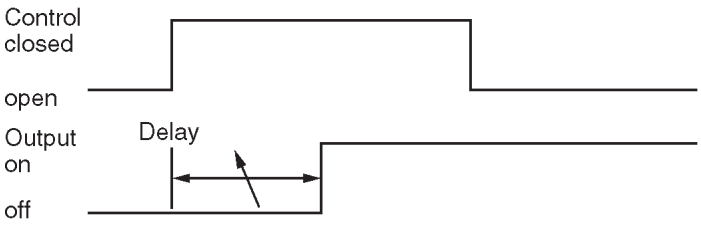
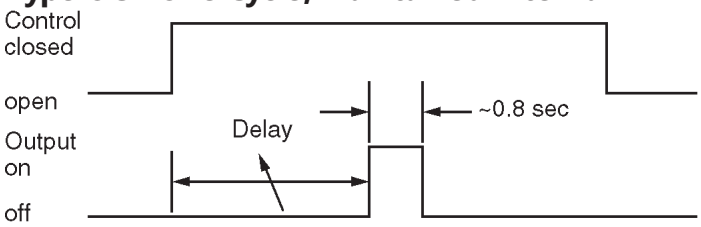
Type E - Pulsed On Delay Latched



Adjustable dual time delay

- Closing the control circuit initiates timing sequence
- Opening and closing the control circuit during timing will not effect timing or output

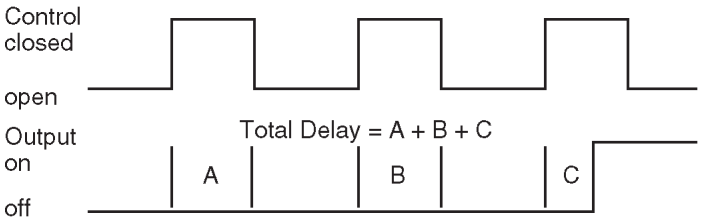
Type OC - One Cycle, Maintained Interval



Fixed time (0.8 sec.) output pulse

- Closing the control circuit starts the timing sequence. The output contacts change state for 0.8 sec. after time delay is completed
- Opening the control circuit during timing resets the time delay to zero

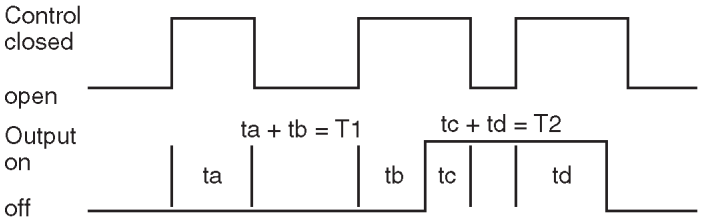
Type G - On Delay, Time Totalizing



Adjustable time delay on energizing

- Closing the control circuit starts the timing sequence
- Opening control circuit during timing stops the timing sequence but does not reset the time accumulated
- Upon time-out, the output will remain latched until reset.

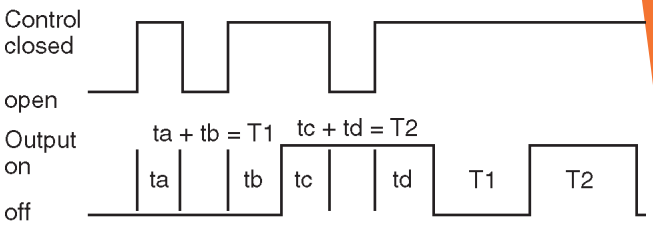
Type Total A - Maintained On Delay/Off Delay One Cycle, Time Totalizing



Programmable dual time delay

- Closing control circuit starts timing sequence
- Opening the control circuit during either timing period stops the timing sequence but does not reset the time accumulated
- Reset is achieved via external reset control

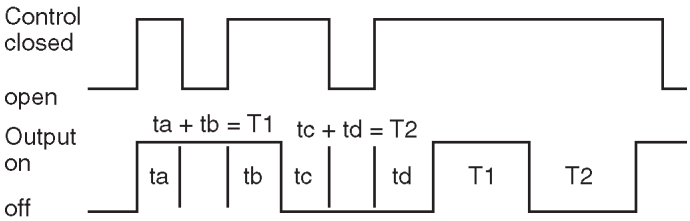
Type Total B - Repeat Cycle, Start Off Time Totalizing



Programmable dual time repeat cycle

- Closing control circuit starts timing sequence
- Opening the control circuit during either timing period stops the timing sequence but does not reset the time accumulated
- Reset is achieved via external reset control

Type Total C - Repeat Cycle, Start On Time Totalizing



Programmable dual time repeat cycle

- Closing control circuit starts timing sequence
- Opening the control circuit during either timing period stops the timing sequence but does not reset the time accumulated
- Reset is achieved via external reset control

TIMERS

Timing Function	Time Range Capability	Mounting				Input	Output	Model
		Base	Plug-in	Block	Panel			
Type 1 On Delay	0.06-500 secs	X				AC	R/SS(1)	1010
			X			AC	R	1012
		X				AC	R	1013
		X				AC	R(3)	1014
	0.025-10 secs					AC	R	1017
	0.02-300 secs	X				AC/DC	R	1017 SP7
	0.02-500 secs		X			AC/DC	R	1019
	.05-20 min.	X				AC/DC	R	1020
	.05-20 min.	X				AC/DC	R	1025
	0.025-2000 secs(2)		X			AC/DC	R	1071
	0.1-10230 sec			X		AC/DC	SS	2110
	0.1-500 hrs(2)		X		X	AC/DC	R	1073
Type 2 Off Delay	0.06-500 secs	X				AC	R/SS(1)	1010
			X			AC	R	1012
		X				AC	R	1013
		X				AC	R(3)	1014
		X				AC	R	1014ULSP13A
	0.06-1000 secs		X			AC/DC	R	1018
	0.02-500 secs		X		X	AC/DC	R	1081
Type 3 Programmable	.02-250 secs	X				AC	R	1013U
	0.1 sec-500 hrs		X		X	AC/DC	R	1073
	0.1 sec-500 hrs		X		X	AC/DC	R	1090
	0.01 sec-9,999 hrs		X		X	AC/DC	R/SS	1094
	0.02 sec-9,999 hrs		X		X	AC/DC	R/SS	1096
	Counter		X		X	AC/DC	R/SS	1105C
Type 4 Pulsed Interval	0.06-500 secs	X				AC	R/SS(1)	1010
			X			AC	R	1012
		X				AC	R	1013
	0.06-1000 secs		X			AC/DC	R	1018
Type 5 Maintained Interval	0.06-500 secs	X				AC	R/SS(1)	1010
			X			AC	R	1012
		X				AC	R	1013
	0.06-1000 secs		X			AC/DC	R	1018
	0.1-10230 secs			X		AC	SS	2115
Types 6 & 7 Pulsed/Maintained Off/On One Cycle	0.06-500 secs	X				AC/DC	R/SS(1)	1030
			X			AC	R	1032
Type 8 On Delay/Off Delay	0.06-500 secs	X				AC	R/SS(1)	1030
			X			AC	R	1032
Type 9 Repeat Cycle	0.06-500 secs	X				AC	R/SS(1)	1060
	0.06-500 secs	X				AC/DC	SS	1061
	0.1 sec - 500 hr(2)		X		X	AC/DC	R	1068

Notes:
(1) R=relay SS=solid state R/SS=relay standard, solid state optional.
(2) Programmable time ranges.
(3) Timed and instant contacts.

MOTION DETECTORS

Sensor Application	Adjustment Range	Operating Speed	Mechanical Input	Prox Input	Model
Zero Speed	0.06-100 secs	1,080 ppm	X		1214
	5-5000 ppm(1)	12,000 ppm	Self contained		1248A
	0.06-500 secs	2,400 ppm	X	X	1260
	0.02-1000 secs	108,000 ppm	X	X	1262
Underspeed	5-5000 ppm	12,000 ppm	Self contained		1248A
	0.02-1000 secs	108,000 ppm	X	X	1262
	0.06-100 secs	1080 ppm	X	X	1217
Overspeed	5-5000 ppm	12,000 ppm	Self contained		1248A
	0.02-1000 secs	108,000 ppm	X	X	1262

Notes:
(1) ppm = pulses per minute

PLC WATCHDOG TIMERS

Adjustment Range	Power Supply	Output	Model
0.06-500 secs	120 VAC	Relay	1260
0.06-100 secs	24 VAC/DC	Relay	1217C
0.06-100 secs	120 VAC	Relay	1217C
0.02-1000 secs	120 VAC	Relay	1262

RESISTANCE/VOLTAGE DETECTORS

Special Features	Base Mount	Plug-in	Input	Output	Model
Voltage detection	X		AC	R	1213
Compact size		X	AC	SS	1230
Time delays	X		AC/DC	R	1232
High/low detection	X		AC/DC	R	1234
Liquid level detection	X		AC	SS	LLD-100

PROXIMITY SWITCHES

Type	Style	Supply	Output	Model
Inductive	Limit switch	10-40 VDC	100 mA	1217P
Inductive	Limit switch	10-26 VDC	100 mA	1221
Inductive	Limit switch	20-250 VAC/DC	500 mA	1248A(1)
Inductive	Limit switch	20-250 VAC/DC	500 mA	1250
Magnetic	Cylindrical	9-26 VDC	100 mA	TMS-D

Notes:
(1) with built in motion detector timer circuitry

STEPPER BOARD

Mounting	Style	Supply	Output	Model
Edge Mount	Programmable Stepper	AC/DC	SS	1050

CSA (Canadian Standards Association) The agency for testing and approving products sold in Canada.

INSTANT CONTACTS Relay contacts which energize or de-energize in conjunction with the input power switch or control device. These contacts operate independently of the timed contacts and can be used to control a separate function.

MAINTAINED INTERVAL A delay which energizes an output for a preset period of time. The control switch or input power must be maintained during the timing interval to complete the delay. This timing function is also known as interval delay, or interval ON.

MOTION DETECTOR A device to detect zero, underspeed or overspeed conditions of pumps, conveyors, blower fans and other similar equipment which requires proper machine speed.

MOV (metal oxide varistor) A component which provides transient protection.

OFF DELAY A delayed de-energization of an output. The delay begins when the control switch is opened. This timing function is also known as delay on break, delay on release, delay on de-energization or slow release.

ON DELAY A delayed energization of an output. The delay begins when the control switch is closed or power applied to the input. This timing function is also known as a time delay, delay on make, delay on operate, delay on energization, or slow operate.

ON DELAY/OFF DELAY This timing function is a combination of on delay and off delay.

POWER ACTUATION The control of a timing function through the application or removal of input power.

PULSED INTERVAL A delay which energizes an output for a preset period of time. The control switch must close only momentarily to initiate this delay. This timing function is also known as a single shot,one shot, pulse stretcher, or latching interval.

RANGE TOLERANCE Factory calibration of time range at room temperature and nominal input voltage.

REPEAT ACCURACY The maximum deviation in the time setting of a timer when operated under constant conditions (constant ON/OFF times, input voltage and temperature). The average of five consecutive operations, starting with the second operation, will serve as the reference for determining the maximum deviation.

REPEAT CYCLE A timing function in which the output is turned ON and OFF repeatedly as long as the control switch is closed or power remains applied to the input. This timing function is also known as a recycle timer or flasher.

RESET TIME The minimum period of time the timer requires to prepare for a new cycle.

TIMING VARIATION VS TEMPERATURE The timing change relative to a reference time delay at any temperature within specified limits. The reference time delay is based on five consecutive operations starting with the second operation and is measured at approximately 23°C, with constant ON/OFF times and input voltage.

TOLERANCE The variation in a quantity from specified values or times.

TRANSIENT PROTECTION Internal protection which prevents damage to the circuit from sudden changes in voltage.

UL (Underwriter's Laboratories, Inc.) The agency for testing and approving products sold in the United States.

REMOTE ADJUST CALCULATIONS

An external timing potentiometer (pot) wired to remote adjust terminals can be used to adjust the time setting from a remote location; to extend the time range of the unit; or to act as a vernier control. Determining the resistance value of the unit's internal pot is necessary for selecting the proper external pot. Calculate resistance value as follows:

1) Determine time range of unit.
   example : 0.06 - 5 secs
2) Determine from specifications the timing ramp (Ω/sec ratio) for that time range. The timing ramp is specified with the minimum time of the time range.
   example : 0.06 -100kΩ/sec
3) Multiply timing ramp by maximum time of time range.
   example : 100kΩ/sec x 5 sec = 500kΩ
4) The product is the resistance value of the unit's internal pot.

Remote adjustment is useful in applications requiring frequent time setting changes due to machine variations or changes in machine function. The external pot can be run from the control cabinet to the work station where time variations occur. Install external pot for remote adjustment as follows:

1) Wire a remote pot of the same resistance value as the unit's internal pot to the remote adjust terminals (remove jumper between terminals).
2) Set unit's internal pot at minimum setting. The remote pot will then provide the same time range as the unit.

The time range of a unit can be extended if an application occasionally requires a slightly longer time than the unit is capable of providing. This capability should be used for minimal time range extensions only. Install external pot for extending time range as follows:

1) Wire a remote pot of the same resistance value as the unit's internal pot to the remote adjust terminals.
2) The internal and external pots are wired in series, so their resistance value is additive and provides an extended time range. Add time ranges of both pots to determine new time range.
   example : Time range of pots is 0.06 - 5 secs.

Set internal pot at	2 secs
Set external pot at	5 secs
Total	7 secs

   Extended time range is 2 - 7 seconds.

Using an external pot as a vernier control provides fine adjustment of the time setting. Use in applications which require precise adjustment of slight changes in time setting. Install external pot for vernier control as follows:

1) Determine time range of unit.
   example : 0.06 - 5 secs
2) Determine range of variation in time setting.
   example : If time setting will vary between 3 and 4 seconds, range of variation in time setting is 1 second: therefore, an external pot is used to make time adjustments within a 1 second time period.
3) Determine timing ramp for unit. (see specifications)
   example : 100kΩ/sec
4) Multiply timing ramp by range of variation in time setting.
   example : 100kΩ/sec x 1 sec = 100kΩ/sec)
5) The product is the resistance value of the external pot which will provide vernier control for a 1 second time period.
6) Set unit's internal pot for 3 seconds.
7) Use external pot for adjusting time between 3 and 4 seconds.

MODEL 1005
BASE MOUNT

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

VOLTAGE: 24V, 48V, 120 V AC/DC or 140V to 345 VDC
140V to 260VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): + 15% - 45% of rated (for type 1,2,& 3)
POWER CONSUMPTION: 10 VA maximum

TYPE: Electromechanical relay
RATING: 10A @ 240VAC maximum
10A @ 120VDC maximum

HI-POT: 1500V terminal to case
1200V between open contacts
CONTACT MATERIAL: AgCdO
SERVICE LIFE: AC = 50 million, DC = 100 million operations minimum; at maximum operating frequency
OPERATING TEMP: -40° to 70° C (-40° to 158°F)
MOUNTING: Base mount, zinc plated steel
TERMINATION: Terminal blocks on face of relay
HOUSING: Powder coated steel cover

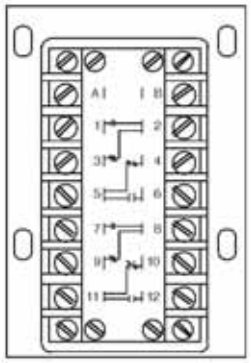
OPERATE/RELEASE TIME: 25 ms max.
OPERATING FREQUENCY: 18,000 operations/hour (mech.)
VIBRATION: 10 to 55 Hz, 1 mm double amplitude
SHOCK: 200 m/s² (approx. 20G)
MAX. SWITCHING CAPACITY: 1,100 VA, 240W resistive load (p.f. = 1)
830 VA, 120W Inductive load (p.f. = 0.4) (L/R = 7 ms)

WIRING

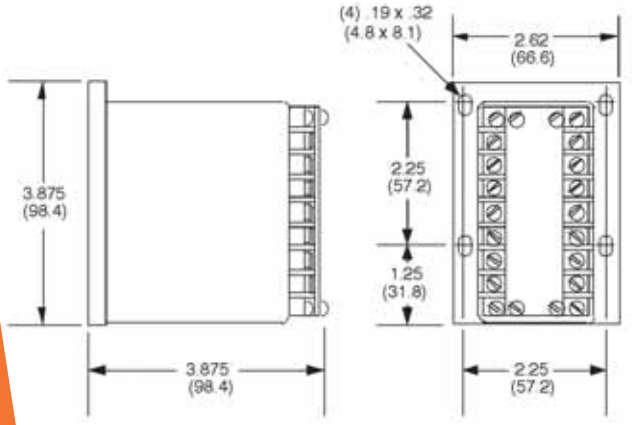
OUTPUT C

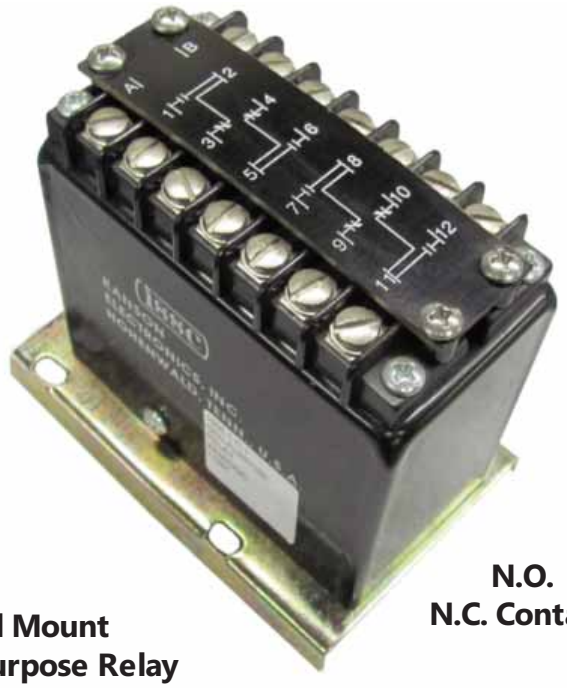
A-B	Voltage input (constant)
1-2	Normally Open
2-3	Normally Closed
5-4	Normally Closed
5-6	Normally Open
7-8	Normally Open
9-8	Normally Closed
11-10	Normally Closed
11-12	Normally Open

Wiring Terminal Location



DIMENSIONS Inches (millimeters)





N.O. and N.C. Contacts

Panel Mount
All Purpose Relay
Limited or Continuous duty rated

All Purpose relay is constructed of solid state components and is ideal for locations where a durable, reliable relay component is required. Built to be used in either limited duty or continous duty. Made of powder coated steel casing and a Zinc coated base plate this rugged industrial relay will last for many years maintenance free.

ORDERING DATA

ORDERING CODE **1005 - 1 - A - 1**

BASIC MODEL NUMBER
1005

INPUT VOLTAGE
1 24 VAC/DC
2 48 VAC/DC
3 120 VAC/DC
4 140V to 345VDC
140V to 260VAC

OUTPUT
A DPDT
B 3PDT
C 4PDT

FUNCTION
1 All Purpose Relay

Note:
Rated up to 345VDC continuous.
Rock Solid " American Made" construction
Virtually indestructible.

800-233-9354 or 931-796-3050 Fax: 931-796-3956 www.issc-kanson.com

Kanson Electronics, Inc.

INDUSTRIAL SOLID STATE TIMER

MODEL 1010
BASE MOUNT

SPECIFICATIONS

INPUT
- **VOLTAGE:** 120VAC, 230VAC
- **FREQUENCY:** 50/60 Hz
- **TOLERANCE (VOLTAGE):** ± 15% of nominal
- **POWER CONSUMPTION:** 10 VA maximum
- **TRANSIENT PROTECTION:** Isolation transformer

OUTPUT
- **TYPE:** Electromechanical relay (solid state available as accessory)
- **RATING:** 10A @ 240VAC maximum

TIMING
- **AVAILABLE TYPES:** On delay, Off delay, Pulsed interval, Maintained interval
- **REPEAT ACCURACY:** ± 1% of setting
- **RESET TIME:** 50 msec minimum
- **INDICATION:** Optional LED - ON when timing (off delay - LED ON when output energized)
- **TIMING RAMP:** 0.06 sec minimum time - 100kΩ/sec
  0.5 sec minimum time - 10kΩ/sec
- **TIME RANGE:** 0.06 to 500 secs in 12 ranges
- **RANGE TOLERANCE:** ≤ 10%
- **CONTROL:** Isolated contact closure
- **CONTROL TERMINALS:** E-F
- **VOLTAGE PRESENT AT CONTROL TERMINALS:** 24VDC min., 40VDC max.

PHYSICAL
- **OPERATING TEMP:** 0° to 50° C (32° to 120°F)
- **TIMING VARIATION VS. TEMP:** ± 5% maximum
- **MOUNTING:** Base mount
- **TERMINATION:** Terminal blocks on face of timer
- **HOUSING:** Metal

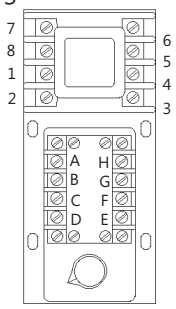
WIRING

OUTPUT B

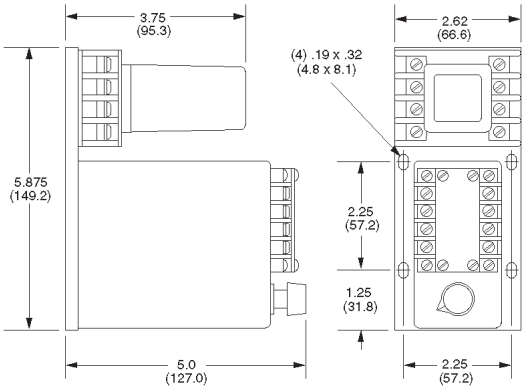
A-B Voltage input (constant)
C-D Remote adjust (jumper if not used)
E-F Control (starts timing function)
G-H Not used
1-3 N.O. timed
1-4 N.C. timed
5-8 N.C. timed
6-8 N.O. timed

Caution: Never apply voltage to terminals C-D-E-F

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



Pulsed Interval **On Delay**
Maintained Interval **Off Delay**

Plug-in DPDT relay output can be quickly replaced or interchanged with optional solid state output. The 1010 is especially useful in applications which require fast timing cycle rate and numerous operations in a short period of time.

ORDERING DATA

ORDERING CODE **1010 - 1 - F - 2 - B OP6**

BASIC MODEL NUMBER
1010

INPUT VOLTAGE
1 120VAC
2 230VAC

TIME RANGE (Secs)

A	0.06-0.10	F	0.06-5.0	L	0.5-250
B	0.06-0.25	G	0.06-10.0	M	0.5-500
C	0.06-0.50	H	0.06-25.0	W	Fixed time (see note)
D	0.06-1.0	J	0.5-50.0		
E	0.06-2.5	K	0.5-100		

NOTE: Specify W and desired fixed time. Factory will set time within 5%

TIMING FUNCTION
1 On delay 4 Pulsed interval
2 Off delay 5 Maintained interval

OUTPUT
B Relay DPDT
(solid state outputs available as accessories)

OPTION (If desired)
OP6 Timing indication light.

APPLICABLE ACCESSORIES
See accessory section for details

Output modules	RP-101,RP-104 thru RP-106
Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

MODEL 1012
PLUG-IN

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

INPUT

VOLTAGE: 120VAC, 24VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10VA maximum
TRANSIENT PROTECTION: Isolation transformer (120VAC only)

OUTPUT

TYPE: Electromechanical relay
MECHANICAL LIFE: 10,000,000 operations
ELECTRICAL LIFE: 300,000 operations
RATING: 10A - 1/6HP at 120VAC, 1/3HP at 240VAC

TIMING

AVAILABLE TYPE: On delay, Off Delay, Pulsed Interval, Maintained Interval
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50msec maximum
INDICATION: Optional LED - ON when timing
TIMING RAMP: .06sec minimum time - 100K ohm/sec
.5sec minimum time - 10K ohm/sec
TIME RANGE: 0.06 to 500 secs in 12 ranges
RANGE TOLERANCE: ≤ 10% at maximum, ≤ 0% at minimum
CONTROL: isolated contact closure
CONTROL TERMINALS: 5-6
VOLTAGE PRESENT AT CONTROL TERMINALS: 24VDC minimum, 40VDC maximum

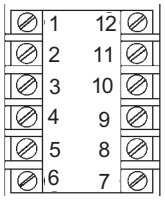
PHYSICAL

OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Plug-in
TERMINATION: 12 pin socket
HOUSING: Metal

WIRING

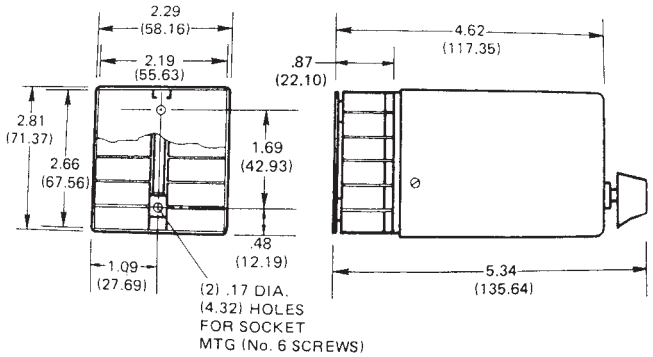
OUTPUT B Wiring Terminal Location

1-2 Voltage input (constant)
3-4 Remote adjust (jumper if not used)
5-6 Control (starts timing function)
7-8 N.O. timed
8-9 N.C. timed
10-11 N.O. timed
11-12 N.C. timed



Caution: never apply voltage to 3-4-5-6

DIMENSIONS Inches (millimeters)



On Delay **Pulsed Interval**
Off Delay **Maintained Interval**

The 1012 is easy to install or replace, keeping downtime to a minimum. The 12 pin base allows both DPDT output and remote adjust connections.

ORDERING DATA

ORDERING CODE **1012 - 1 - G - 1 - B OP6**

BASIC MODEL NUMBER
1012

INPUT VOLTAGE
1 120 VAC
2 24 VAC

TIME RANGE

A .06-.10	F .06-5.0	L .5-250
B .06-.25	G .06-10.0	M .5-500
C .06-.50	H .06-25.0	W (fixed time)
D .06-1.0	J .5-50.0	(see note)
E .06-2.5	K .5-100	

Note: Specify W; desired fixed time set by factory

TIMING FUNCTION

1 On delay	4 Pulsed Interval
2 Off Delay	5 Maintained Interval

OUTPUT
B Relay DPDT

OPTION (if desired)
OP6 Timing indication light

ACCESSORIES
See accessory section for details

Potentiometers	RP201-RP210
Locking attachment	RP217
Reference dial	RP216
12 pin socket	RP301

(one included with unit)

Models 1013UL and 1013CSA

On Delay
Off Delay
Pulsed Interval
Maintained Interval

Model 1013

All-Purpose Design is economical and useful in a variety of industrial applications.

UL File No. E50957

CSA File No. LR92815

ORDERING DATA

ORDERING CODE 1013 - 1 - G - 1 - B

BASIC MODEL NUMBER
- 1013
- 1013UL
- 1013CSA

INPUT VOLTAGE
- 1 120VAC

TIME RANGE (Secs)

A	0.06-0.10	F	0.06-5.0	L	0.5-250
B	0.06-0.25	G	0.06-10.0	M	0.5-500
C	0.06-0.50	H	0.06-25.0	W	Fixed time (see note)
D	0.06-1.0	J	0.5-50.0		
E	0.06-2.5	K	0.5-100		

NOTE: Specify W and desired fixed time. Factory will set time within 5%

TIMING FUNCTION
- 1 On delay
- 2 Off delay
- * 5 Maintained interval
- 4 Pulsed interval
- *Not available on CSA units

OUTPUT
- B Relay 1 N.O. 1 N.C.

OPTION (1013UL/CSA only, now included on 1013 units)

APPLICABLE ACCESSORIES

See accessory section for details

Potentiometers	RP-201 thru RP-210
Reference dial	RP-216

SPECIFICATIONS

INPUT
- **VOLTAGE:** 120VAC
- **FREQUENCY:** 50/60 Hz
- **TOLERANCE (VOLTAGE):** ± 15% of nominal
- **POWER CONSUMPTION:** 10 VA maximum
- **TRANSIENT PROTECTION:** Isolation transformer

OUTPUT
- **TYPE:** Electromechanical relay
- **RATING:** 10A @ 240VAC maximum

TIMING
- **AVAILABLE TYPES:** On delay, Off delay, Pulsed interval, Maintained interval
- **REPEAT ACCURACY:** ± 1% of setting
- **RESET TIME:** 50 msec minimum
- **INDICATION:** 1013 - LED,ON when timing
  1013UL/1013CSA - Optional incandescent light, ON when timing (off delay - light ON when output energized)
- **TIMING RAMP:** 0.06 sec minimum time - 100kΩ/sec
  0.5 sec minimum time - 10kΩ/sec
- **TIME RANGE:** 0.06 to 500 secs in 12 ranges
- **RANGE TOLERANCE:** ≤ 10%
- **CONTROL:** Isolated contact closure
- **CONTROL TERMINALS:** E-F
- **VOLTAGE PRESENT AT CONTROL TERMINALS:** 24VDC minimum, 40VDC maximum

PHYSICAL
- **OPERATING TEMP:** 0° to 50° C (32° to 120°F)
- **TIMING VARIATION VS. TEMP:** ± 5% maximum
- **MOUNTING:** Base mount
- **TERMINATION:** Terminal block on face of timer
- **HOUSING:** Metal

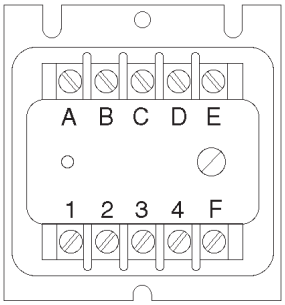
WIRING

OUTPUT B, B1, B2

A-B	Voltage input (constant)
C-D	Remote adjust (jumper if not used)
E-F	Control (starts timing function)
1-2	N.O. timed (except B2, N.C.)
3-4	N.C. timed (except B1, N.O.)

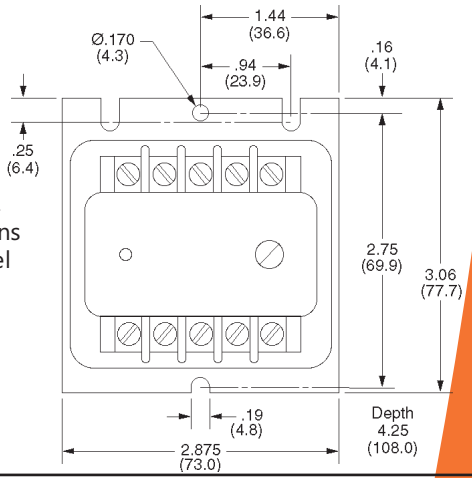
Caution: Never apply voltage to terminals C-D-E-F

Wiring Terminal Location



DIMENSIONS Inches (millimeters)

1013 and 1013UL mounting dimensions are identical, Model 1013 shown



SPECIFICATIONS

INPUT

VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

OUTPUT

TYPE: Electromechanical relay
RATING: 10A @ 240VAC maximum

TIMING

AVAILABLE TYPES: On delay, Off delay, Normally Open, Normally Closed (Selectable)
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
INDICATION: 1013 - LED,ON when timing
TIMING RAMP: 0.02 sec minimum time - 100kΩ/sec
0.5 sec minimum time - 10kΩ/sec
TIME RANGE: 0.02 to 250 secs in 12 ranges
RANGE TOLERANCE: ≤ 10%
CONTROL: Isolated contact closure
VOLTAGE PRESENT AT CONTROL TERMINALS: 24VDC minimum, 40VDC maximum

PHYSICAL

OPERATING TEMP: -32° to 71° C (-25° to 160°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

ORDERING DATA

ORDERING CODE **1013U - 1 - L - 3 - C**

BASIC MODEL NUMBER
1013U
INPUT VOLTAGE
1 120VAC
TIME RANGE (Secs)
E 0.02-2.5
H 0.3-30
L 0.5-250
TIMING FUNCTION
3 Selectable
OUTPUT
C Relay 1 N.O. or 1 N.C., 1.5 amp AC Instant contacts (SPDT)

APPLICABLE ACCESSORIES
See accessory section for details
Potentiometers RP-201 thru RP-210

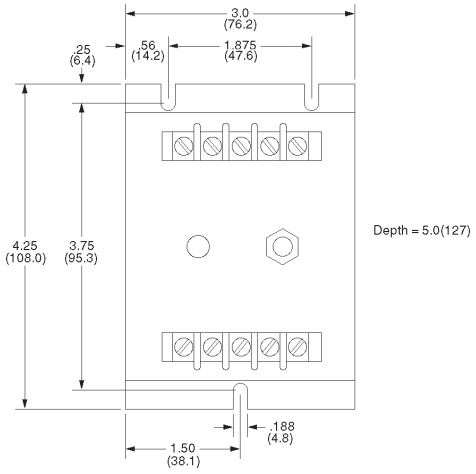
On Delay
Off Delay
Normally Open
Normally Closed
(selectable)

Ease of Use Design and selectable output makes this unit extremely flexible. This unit optically isolated control circuit operates at 120 VAC and has transient protection to 1500 volts.

WIRING

OUTPUT C
L1-L2 Voltage input (constant)
P1-P2 Control (starts timing function)
1-2 N.O. instant
2-3 N.C. instant
S (selectable) timed

DIMENSIONS Inches (millimeters)



Off Delay

Instant Contacts simplify the timing control circuit. A separate relay, which operates in conjunction with the input power switch or control device, can be used to operate a separate control function. Timing function controls timing relay.

AC Control Circuit is compatible with both standard mechanical switches and solid state proximity sensors.

Many other specialty (SP) configurations available

ORDERING DATA

ORDERING CODE 1014UL - 1 - F - 2 - SP13A

BASIC MODEL NUMBER
1014UL

INPUT VOLTAGE
1 120VAC

TIME RANGE (Secs)

A	0.06-0.10	F	0.06-5.0	L	0.5-250
B	0.06-0.25	G	0.06-10.0	M	0.5-500
C	0.06-0.50	H	0.06-25.0	W	Fixed time (see note)
D	0.06-1.0	J	0.5-50.0		
E	0.06-2.5	K	0.5-100		

Remote Adjust between terminals 5 and 6 will adjust timing as follows:

100K resistor 1% 1 sec.
73.2K resistor 1% 732 msec
47.5K resistor 1% 475 msec
21K resistor 1% 210 msec

TIMING FUNCTION
2 Off delay

OUTPUT
SP13A

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

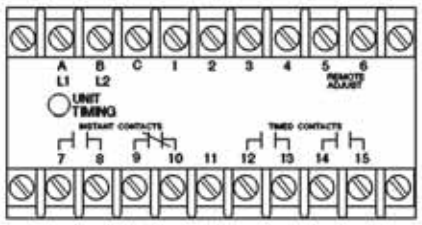
OUTPUT
TYPE: Two electromechanical relays
RATING: 10A @ 240VAC maximum

TIMING
AVAILABLE TYPES: On delay, Off delay
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
INDICATION: LED, ON when timing
TIMING RAMP: 0.06 sec minimum time - 100kΩ/sec
0.5 sec minimum time - 10kΩ/sec
TIME RANGE: 0.06 to 500 secs in 12 ranges
RANGE TOLERANCE: ≤ 10%
CONTROL: Isolated contact closure or AC proximity sensor
CONTROL TERMINALS: A-C
VOLTAGE PRESENT AT CONTROL TERMINALS: Same as input voltage

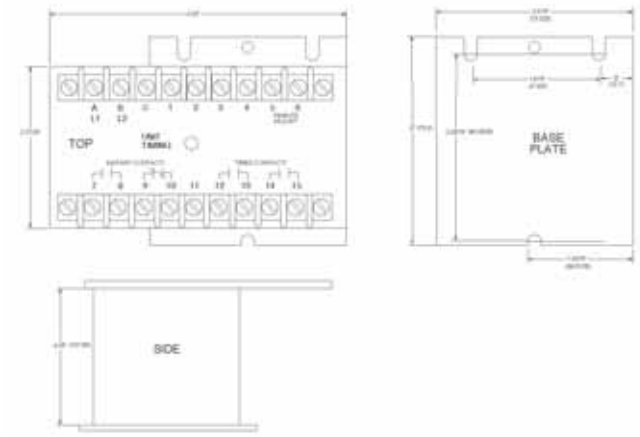
PHYSICAL
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal

WIRING

OUTPUT
A-B Voltage input (constant)
A-C Control (starts timing)
5-6 Remote adjust (never apply voltage)
7-8 N.O. instant
9-10 N.C. instant
12-13 N.O. timed
14-15 N.O. timed



DIMENSIONS Inches (millimeters)



MODEL 1014
BASE MOUNT

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

INPUT
- **VOLTAGE:** 120VAC
- **FREQUENCY:** 50/60 Hz
- **TOLERANCE (VOLTAGE):** ± 15% of nominal
- **POWER CONSUMPTION:** 10 VA maximum
- **TRANSIENT PROTECTION:** Isolation transformer

OUTPUT
- **TYPE:** Two electromechanical relays
- **RATING:** 10A @ 240VAC maximum

TIMING
- **AVAILABLE TYPES:** On delay, Off delay
- **REPEAT ACCURACY:** ± 1% of setting
- **RESET TIME:** 50 msec minimum
- **INDICATION:** LED, ON when timing
- **TIMING RAMP:** 0.06 sec minimum time - 100kΩ/sec
  0.5 sec minimum time - 10kΩ/sec
- **TIME RANGE:** 0.06 to 500 secs in 12 ranges
- **RANGE TOLERANCE:** ≤ 10%
- **CONTROL:** Isolated contact closure or
  AC proximity sensor
- **CONTROL TERMINALS:** A-C
- **VOLTAGE PRESENT AT CONTROL TERMINALS:**
  Same as input voltage

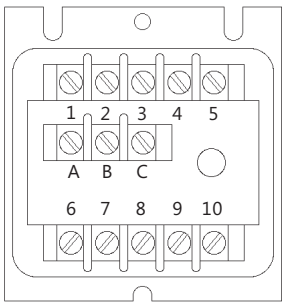
PHYSICAL
- **OPERATING TEMP:** 0° to 50° C (32° to 120°F)
- **TIMING VARIATION VS. TEMP:** ± 5% maximum
- **MOUNTING:** Base mount
- **TERMINATION:** Terminal blocks on face of timer
- **HOUSING:** Metal

WIRING

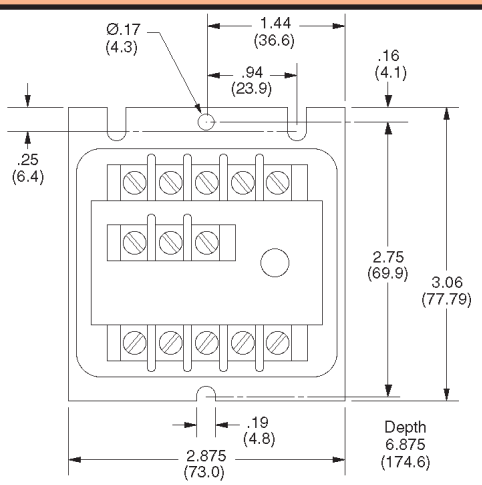
OUTPUT A		
A-B Voltage input (constant)	3-4 N.O.	instant
	4-5 N.C.	instant
A-C Control (starts timing)	6-7 N.O.	timed
	7-8 N.C.	timed
1-2 Remote adjust (jumper if not used)	9-10 N.O.	timed

OUTPUT B		
A-B Voltage input (constant)	2-3 N.C.	instant
	4-5 N.O.	instant
A-C Control (starts timing)	6-7 N.O.	timed
	7-8 N.C.	timed
1-2 N.O. instant	9-10 N.O.	timed

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



On Delay
Off Delay

Instant Contacts simplify the timing control circuit. A separate relay, which operates in conjunction with the input power switch or control device, can be used to operate a separate control function. Timing function controls timing relay.

AC Control Circuit is compatible with both standard mechanical switches and solid state proximity sensors.

UL File No. E50957

ORDERING DATA

ORDERING CODE 1014 - 1 - F - 2 - B

BASIC MODEL NUMBER
- 1014
- 1014UL

INPUT VOLTAGE
- 1 120VAC

TIME RANGE (Secs)

A	0.06-0.10	F	0.06-5.0	L	0.5-250
B	0.06-0.25	G	0.06-10.0	M	0.5-500
C	0.06-0.50	H	0.06-25.0	W	Fixed time (see note)
D	0.06-1.0	J	0.5-50.0		
E	0.06-2.5	K	0.5-100		

NOTE: Specify W and desired fixed time. Factory will set time within 5%

TIMING FUNCTION
- 1 On delay
- 2 Off delay

OUTPUT
- A Instant Relay 1 SPDT
  Timed Relay 1 SPDT, 1 N.O.
- B Instant Relay 1 SPDT, 1 N.O.
  Timed Relay 1 SPDT, 1 N.O.

{ includes remote adjust connections

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

800-233-9354 or 931-796-3050 Fax: 931-796-3956 www.issc-kanson.com

On Delay

Small, Plug-in Unit saves space and installation time.
Input Power Actuates timing sequence, eliminating the need for a separate control circuit. Removing power automatically resets timing sequence.

UL File No. E50957

CSA File No. LR92815

ORDERING DATA

ORDERING CODE 1017 - 5 - 2 - 1 OP1

BASIC MODEL NUMBER
1017

TIME RANGE (Secs)
1 0.025-1.0
2.5 0.025-2.5
5 0.025-5
10 0.1 - 10
See Model 1071 for other time ranges, outputs, and input voltages.

OUTPUT
1 Relay DPDT (8 pin plug)
2 Relay SPDT w/remote adjust (8 pin plug)

INPUT VOLTAGE
1 120VAC/DC

OPTION (If desired)
OP1 Omit potentiometer from unit (applies to output 2 only)
Timing indication light (previously OP10) is now standard on model 1017

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-204, RP-207 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217
8 pin socket	RP-302
Hold down clip	RP-305

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC/DC
FREQUENCY: 50/60 Hz or DC
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 5 VA maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 5 A @ 240VAC maximum

TIMING
AVAILABLE TYPES: On delay
REPEAT ACCURACY: ± 1% of setting or 8 msec, whichever is greater.
RESET TIME: 40 msec minimum
INDICATION: LED - ON when timing
TIMING RAMP: 0.025 sec minimum time - 1MΩ/sec
0.1 sec minimum time - 100kΩ/sec
TIME RANGE: 0.025 to 10 secs in 4 ranges
RANGE TOLERANCE: ≤ 30% at maximum
≤ 0% at minimum
CONTROL: Power applied to input initiates timing cycle
CONTROL TERMINALS: 2-7
VOLTAGE PRESENT AT CONTROL TERMINALS: Same as input voltage

PHYSICAL
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum or 8 msec, whichever is greater
MOUNTING: Plug-in
TERMINATION: 8 pin socket
HOUSING: Plastic

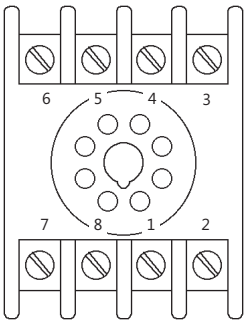
WIRING

OUTPUT 1
2-7 Voltage input (control)
1-3 N.O. timed
1-4 N.C. timed
8-6 N.O. timed
8-5 N.C. timed

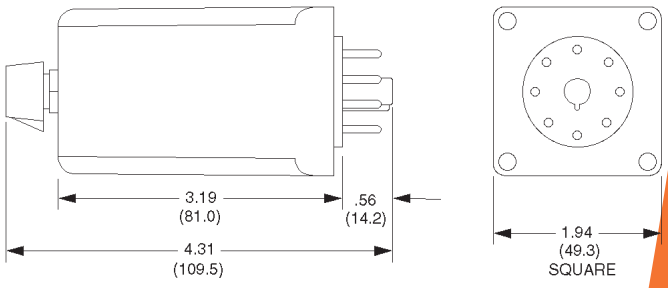
OUTPUT 2
2-7 Voltage input (control)
1-3 N.O. timed
1-4 N.C. timed
5-6 Remote adjust (jumper if not used)
8 Not used

Caution: Never apply voltage to 5-6

Wiring Terminal Location
8 Pin Socket



DIMENSIONS Inches (millimeters)



MODEL 1017 SP7
BASE MOUNT

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

INPUT

VOLTAGE: 24V AC/DC, 48V AC/DC, 120VAC/125VDC, 240VAC/250VDC
TOLERANCE (VOLTAGE): ± 15% of nominal, ± 10% for 24V
POWER CONSUMPTION: 16 W maximum
TRANSIENT PROTECTION: TVS

OUTPUT

TYPE: Electromechanical relay
RATING: 3A @ 150 VDC maximum
10A @ 240 VAC 80% PF maximum

TIMING

AVAILABLE TYPE: On delay
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
TIME RANGE: 1.5 to 120 cycles in 4 ranges or 0.5 to 300 sec in 4 ranges
RANGE TOLERANCE: ≤ 10%

PHYSICAL

OPERATING TEMP: -40° to 65° C (-40° to 150°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal
HI-POT: 1500V terminals to case, 1200V between open contacts
NOTE: Never apply HI-POT voltage across terminals A&B, 1&2, or D&4.

WIRING

OUTPUT A

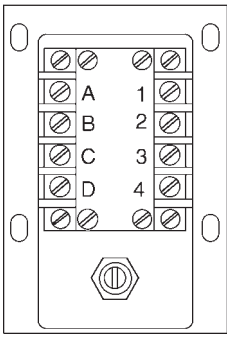
A-B Voltage input
1-2 N.C. timed(1 positive)
3-4 N.O. timed(4 positive)

OUTPUT B

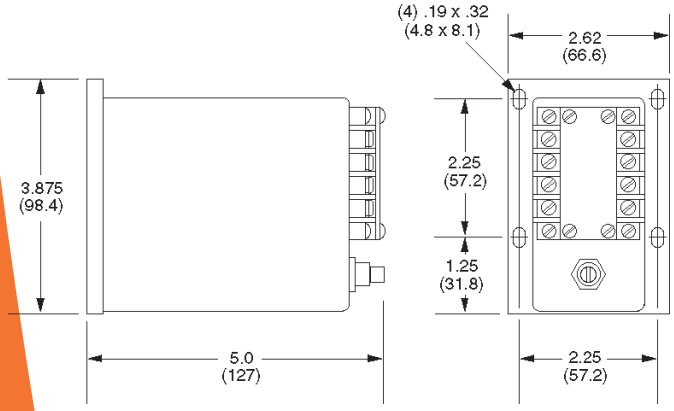
A-B Voltage input
2-1 N.C. timed(2 positive)
2-3 N.O. timed(2 positive)
D-4 N.C. timed(D positive)
D-C N.O. timed(D positive)

In DC applications indicated polarity provides optimum arc suppression

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



On Delay

The 1017-SP7 is a special purpose, limited duty, on delay timer for electric utility applications capable of high voltage DC switching. It is equipped with transient protection and housed in a metal enclosure for maximum noise immunity. The timing dial is calibrated in AC cycles at 60Hz. or seconds.

ORDERING DATA

ORDERING CODE **1017 SP7 - B - 4 - B**

BASIC MODEL NUMBER
1017-SP7

INPUT VOLTAGE
D 24V AC/DC
A 48V AC/DC
B 120VAC/125VDC
C 240VAC/250VDC
E 208VAC/208VDC

TIME RANGE

1	1.5-30 Cycles*	7	0.5-30 Seconds
2	1.5-45 Cycles*	8	0.5-60 Seconds
3	1.5-60 Cycles*	9	0.5-120 Seconds
4	1.5-120 Cycles*	10	0.5-300 Seconds

(*Cycles at 60Hz)

TIMING FUNCTION
On delay

OUTPUT
A Relay 1 N.O., 1 N.C.
B Relay DPDT

ACCESSORIES
See accessory section for details

Locking attachment RP-217

800-233-9354 or 931-796-3050 Fax: 931-796-3956 www.issc-kanson.com

Off Delay
Pulsed Interval
Maintained Interval

The Reliable 1018 is a general purpose off delay timer. The standard unit can be converted to operate in pulsed interval timing function, or it can be ordered with option 13 to operate in the maintained interval timing function.
Small, Plug-in Unit saves space and installation time.

UL File No. E50957

ORDERING DATA

ORDERING CODE **1018 - A - 1 OP13**

BASIC MODEL NUMBER
1018

TIME RANGE (Secs)

A	0.06-1.0	L	0.06-2.5
B	0.5-10.0	M	0.5-25.0
C	5-100	N	0.5-50.0
D	5-250	R	0.06-5.0
E	5-500	S	0.12-1.0
J	5-1000		

OUTPUT
1 Relay DPDT (11 pin plug std, 8 pin for OP13)
2 Relay SPDT w/remote adjust (11 pin plug)

OPTION (If desired)
OP1 (Omit potentiometer from unit) Is now standard on the model 1018 with output 2.
OP4 24VAC/DC input
OP13 Maintained interval timing function - Type 5
(Only available with 8 pin plug and output 1)

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-204, RP-207 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217
8 pin socket	RP-302
11 pin socket	RP-303
Hold down clip	RP-305

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC/DC, 24VAC/DC
FREQUENCY: 50/60 Hz or DC
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 3 VA maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 10 A @ 240VAC maximum

TIMING
TYPES: Off delay, Pulsed interval*, Maintained interval
REPEAT ACCURACY: ± 1% of setting or 8 msecs, whichever is greater.
RESET TIME: 50 msec minimum - Types 2 & 4,
100 msec minimum - Type 5
INITIATE TIME: 5 ms minimum - Types 2 & 4 only
INDICATION: LED - ON when timing
TIMING RAMP: 0.06 sec minimum time - 1MΩ/sec
0.5 sec minimum time - 100kΩ/sec
5 sec minimum time - 10kΩ/sec
TIME RANGE: 0.06 to 1000 secs in 10 ranges
RANGE TOLERANCE: ≤ 30% at maximum,
≤ 0% at minimum
CONTROL: Isolated contact closure
CONTROL TERMINALS: 5-6 (Types 2 and 4)
2-7(for option 13 - Type 5)
VOLTAGE PRESENT AT CONTROL TERMINALS:
70VDC (120VAC/DC - Types 2 and 4)
30VDC (24VAC - Types 2 and 4)
24VDC (24VDC - Types 2 and 4)
Same as input voltage (Type 5)
*Shipped as an off delay. Remove jumper clip (see dimensions) to convert to pulsed interval

PHYSICAL
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum or 8 msec, whichever is greater (up to 500 secs)
MOUNTING: Plug-in
TERMINATION: 8 or 11 pin socket
HOUSING: Plastic

WIRING

OUTPUT 1
2-10 Voltage input (constant)
1-3 N.O. timed
1-4 N.C. timed
11-9 N.O. timed
11-8 N.C. timed
5-6 Control
7 Not used

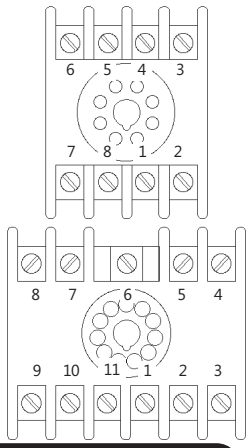
Caution: Never apply voltage to 5-6

OUTPUT 2
2-10 Voltage input (constant)
1-3 N.O. timed
1-4 N.C. timed
8-9 Remote adjust
5-6 Control
7-11 Not used

Caution: Never apply voltage to 5-6-8-9

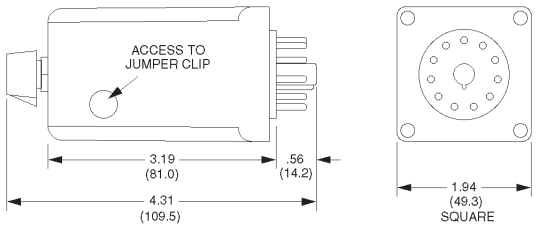
OPTION 13 (output 1 only)
Maintained interval 1-4 N.C. timed
2-7 Voltage input (control) 8-5 N.C. timed
8-6 N.O. timed
1-3 N.O. timed

Wiring Terminal Location



DIMENSIONS Inches (millimeters)

11 PIN BASE SHOWN



MODEL 1019
PLUG-IN

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC/DC
FREQUENCY: 50/60 Hz or DC
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 3 VA maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 10 A @ 240VAC maximum

TIMING
TYPE: On delay
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 40 msec minimum
TIMING RAMP: 0.02 sec min time - 1MΩ/sec
0.06 sec min time - 100kΩ/sec
0.5 sec min time - 10kΩ/sec
TIME RANGE: 0.02 to 500 secs in 6 ranges
RANGE TOLERANCE: ≤ 30% at maximum
≤ 0% at minimum
CONTROL: Application of power initiates timing cycle
CONTROL TERMINALS: A-B
VOLTAGE PRESENT AT CONTROL TERMINALS:
Same as input voltage

PHYSICAL
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Plug-in
TERMINATION: 11 pin blade socket
HOUSING: Plastic

WIRING

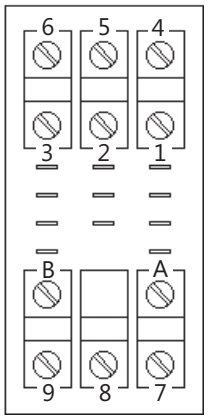
OUTPUT 1
A-B Voltage input
4-7 N.O. timed
1-7 N.C. timed
6-9 N.O. timed
3-9 N.C. timed
2-5-8 Not used

OUTPUT 3
A-B Voltage input
4-7 N.O. timed
1-7 N.C. timed
6-9 N.O. timed
3-9 N.C. timed
2-5 Remote adjust (jumper if not used)
8 Not used

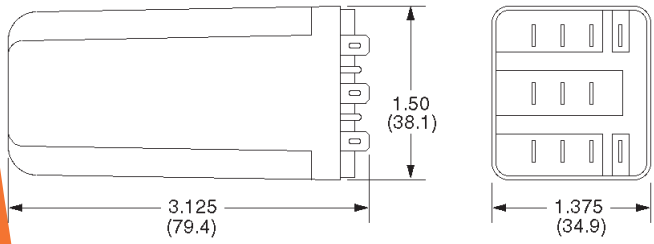
Caution: Never apply voltage to 2-5

OUTPUT 4
A-B Voltage input
1-7 N.C. timed
4-7 N.O. timed
3-9 N.C. timed
6-9 N.O. timed
2-8 N.C. timed
5-8 N.O. timed

Wiring Terminal Location
11 Pin Blade Socket



DIMENSIONS Inches (millimeters)



On Delay

Small, Economical plug-in unit saves space and installation time.

Input Power Actuates timing sequence, eliminating the need for a separate control circuit. Removing power automatically resets timing sequence.

UL File No. E50957

ORDERING DATA

ORDERING CODE **1019 - 10 - 1 - 2**

BASIC MODEL NUMBER
1019

TIME RANGE (Secs)

1	0.02-1.0	50	0.06-50.0
5	0.02-5.0	100	0.5-100
10	0.06-10.0	500	0.5-500

OUTPUT
1 Relay DPDT
3 Relay DPDT w/remote adjust
4 Relay 3PDT

INPUT
2 120VAC/DC

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-207, RP-209
Reference dial	RP-216
Locking attachment	RP-217
11 pin socket	RP-304
Hold down clip	RP-306

Motor ExcessRun Protection

The 1020 is a special purpose on delay timer for electric motor over-run protection. It is equipped with transient protection and housed in a metal enclosure for maximum noise immunity. LED show's timed out condition, and has a reset button.

ORDERING DATA

ORDERING CODE **1020 - B - W - B**

BASIC MODEL NUMBER
1020

INPUT VOLTAGE
D 24V AC/DC
A 48V AC/DC
B 120VAC/125VDC
C 240VAC/250VDC

TIME RANGE
W Factory Fixed 3 min
Available from 0.5 to 20 min.
Customer specified

TIMING FUNCTION
On delay

OUTPUT
A Relay 1 N.O. 1 N.C.
B Relay DPDT

ACCESSORIES
See accessory section for details

Locking attachment RP-217

SPECIFICATIONS

INPUT
VOLTAGE: 24V AC/DC, 48V AC/DC, 120VAC/125VDC, 240VAC/250VDC
TOLERANCE (VOLTAGE): ± 15% of nominal, ± 10% for 24V
POWER CONSUMPTION: 16 W maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 3A @ 150 VDC maximum
10A @ 240 VAC 80% PF maximum

TIMING
AVAILABLE TYPE: On delay
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
TIME RANGE: Factory Fixed to customer specifications. Available from 0.5 to 20 min.
RANGE TOLERANCE: ≤ 10% at maximum, ≤ 0% at minimum

PHYSICAL
OPERATING TEMP: -40° to 65° C (-40° to 150°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal
HI-POT: 1500V terminals to case, 1200V between open contacts

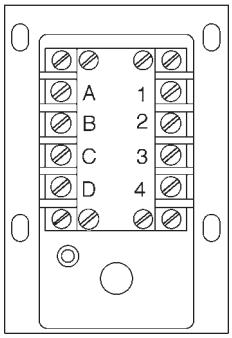
WIRING

OUTPUT A
A-B Voltage input
1-2 N.C. timed(1 positive)
3-4 N.O. timed(4 positive)

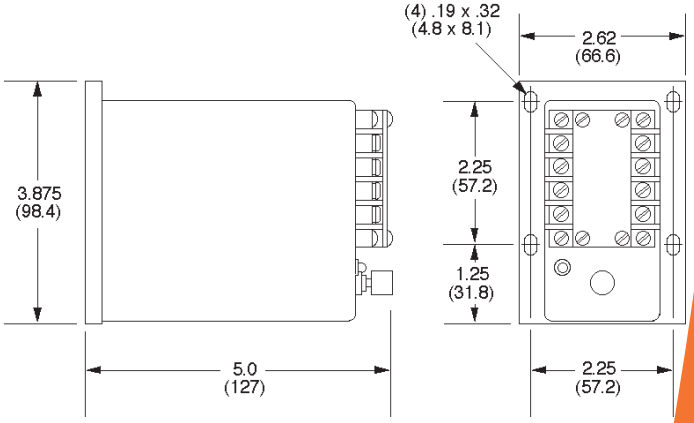
OUTPUT B
A-B Voltage input
2-1 N.C. timed(2 positive)
2-3 N.O. timed(2 positive)
D-4 N.C. timed(D positive)
D-C N.O. timed(D positive)

In DC applications indicated polarity provides optimum arc suppression

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



SPECIFICATIONS

INPUT

VOLTAGE: 48V AC/DC, 120VAC/125VDC, 240VAC/250VDC
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 16 W maximum
TRANSIENT PROTECTION: MOV

OUTPUT

TYPE: Electromechanical relay
RATING: 7.5A maximum

TIMING

AVAILABLE TYPE: On delay
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
TIME RANGE: Factory Fixed to customer specifications. Available from 0.5 to 20 min.
RANGE TOLERANCE: ≤ 10% at maximum, ≤ 0% at minimum

PHYSICAL

OPERATING TEMP: -40° to 65° C (-40° to 150°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal
HI-POT: 1500V terminals to case, 1000V between open contacts

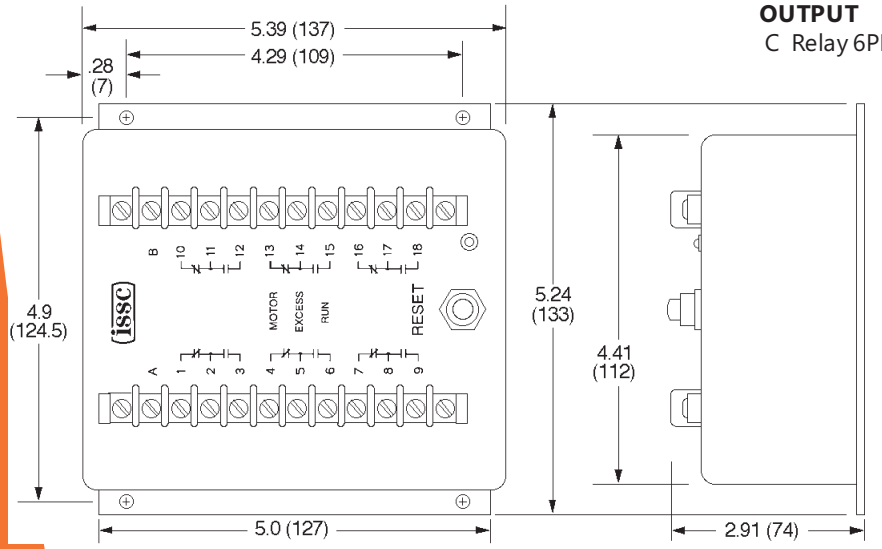
WIRING

OUTPUT C

A-B	Voltage input		
2-1	N.C. timed(2 positive)	11-10	N.C. timed(11 positive)
2-3	N.O. timed(2 positive)	11-12	N.O. timed(11 positive)
5-4	N.C. timed(5 positive)	14-13	N.C. timed(14 positive)
5-6	N.O. timed(5 positive)	14-15	N.O. timed(14 positive)
8-7	N.C. timed(8 positive)	17-16	N.C. timed(17 positive)
8-9	N.O. timed(8 positive)	17-18	N.O. timed(17 positive)

In DC applications indicated polarity provides optimum arc suppression

DIMENSIONS Inches (millimeters)



Motor ExcessRun Protection - 6PDT

The 1025 is a special purpose on delay timer for electric motor over-run protection featuring 6 normally open and 6 normally closed sets of contacts. It is equipped with transient protection and housed in a metal enclosure for maximum noise immunity. LED show's timed out condition, and has a reset button.

ORDERING DATA

ORDERING CODE **1025 - B - 3 - B**

BASIC MODEL NUMBER
1025
INPUT VOLTAGE
A 48V AC/DC
B 120VAC/125VDC
C 240VAC/250VDC
TIME RANGE
3 Factory Fixed 3 min
Available from 0.5 to 20 min.
Customer specified
TIMING FUNCTION
On delay
OUTPUT
C Relay 6PDT

Pulsed Off-On One Cycle

Maintained Off-On One Cycle

On Delay/Off Delay

Plug-in DPDT relay output can be quickly replaced. The 1030 is especially useful in applications which require fast timing cycle rate and numerous operations in a short period of time.

SPECIFICATIONS

INPUT
- **VOLTAGE:** 120VAC, 24VAC, 240VAC
- **FREQUENCY:** 50/60 Hz
- **TOLERANCE (VOLTAGE):** ± 15% of nominal
- **POWER CONSUMPTION:** 10 VA maximum
- **TRANSIENT PROTECTION:** Isolation transformer (120VAC and 240 VAC only)

OUTPUT
- **TYPE:** Electromechanical relay (solid state available as accessory)
- **RATING:** 10A @ 240VAC maximum

TIMING
- **AVAILABLE TYPES:** Pulsed off-on one cycle, Maintained off-on one cycle, On delay/Off delay
- **REPEAT ACCURACY:** ± 1% of setting
- **RESET TIME:** 50 msec minimum
- **INDICATION:** LED - ON when output energized
- **TIMING RAMP:** 0.06 sec min time - 100kΩ/sec; 0.5 sec min time - 10kΩ/sec
- **TIME RANGE:** 0.06 to 500 secs in 9 ranges
- **RANGE TOLERANCE:** ≤ 10% at max,
- **CONTROL:** Isolated contact closure
- **CONTROL TERMINALS:** E-F
- **VOLTAGE PRESENT AT CONTROL TERMINALS:** 24VDC minimum, 40VDC maximum

PHYSICAL
- **OPERATING TEMP:** 0° to 50° C (32° to 120°F)
- **TIMING VARIATION VS. TEMP:** ± 5% maximum
- **MOUNTING:** Base mount
- **TERMINATION:** Terminal blocks on face of timer
- **HOUSING:** Metal

ORDERING DATA

ORDERING CODE 1030 - 1 - G - G - 6 - B

BASIC MODEL NUMBER
1030

INPUT VOLTAGE
1 120VAC
2 240VAC
3 24VAC

TIME RANGE (Secs) († OFF time, † ON time)

D	0.06-1.0	J	0.5-50
E	0.06-2.5	K	0.5-100
F	0.06-5.0	L	0.5-250
G	0.06-10	M	0.5-500
H	0.06-25		

NOTE: † On and Off times must have same minimum time.

TIMING FUNCTION
6 Pulsed off/on
7 Maintained off/on
8 On delay/Off delay

OUTPUT
B Relay DPDT

APPLICABLE ACCESSORIES
See accessory section for details

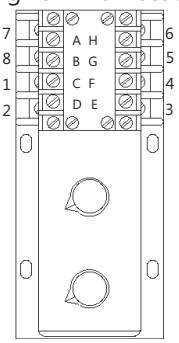
Output modules	RP-101, RP-103
Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

WIRING

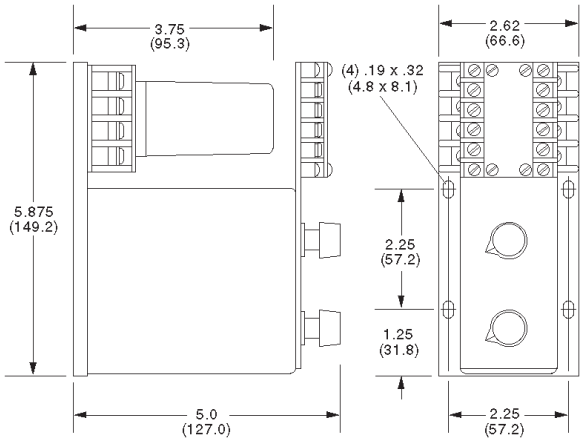
OUTPUT B
A-B Voltage input (constant)
C-D Remote adjust for OFF time, (jumper if not used)
E-F Control (starts timing function)
G-H Remote adjust for ON time, (jumper if not used)
1-3 N.O. timed
1-4 N.C. timed
5-8 N.C. timed
6-8 N.O. timed

Caution: Never apply voltage to C-D-E-F-G-H

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



MODEL 1032
PLUG-IN

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

INPUT

VOLTAGE: 120VAC, 24VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10VA maximum
TRANSIENT PROTECTION: Isolation transformer (120VAC only)

OUTPUT

TYPE: Electromechanical relay
MECHANICAL LIFE: 10,000,000 operations
ELECTRICAL LIFE: 300,000 operations
RATING: 10A - 1/6HP at 120VAC, 1/3HP at 240VAC

TIMING

AVAILABLE TYPE: Maintained off-on one cycle, pulsed off-on one cycle, on-off
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50msec maximum
INDICATION: LED on when output is energized
TIMING RAMP: .06sec minimum time - 100K ohm/sec
.5sec minimum time - 10K ohm/sec
TIME RANGE: 0.06 to 500 secs in 11 ranges
RANGE TOLERANCE: ≤ 10% at maximum, ≤ 0% at minimum
CONTROL: isolated contact closure
CONTROL TERMINALS: 5-6
VOLTAGE PRESENT AT CONTROL TERMINALS: 24VDC minimum, 40VDC maximum

PHYSICAL

OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Plug-in
TERMINATION: 12 pin socket
HOUSING: Metal

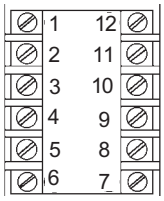
WIRING

OUTPUT B

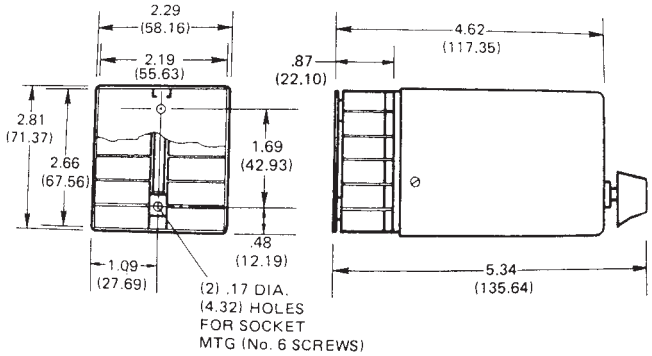
1-2	Voltage input (constant)
3-4	Remote adjust (jumper if not used)
5-6	Control (starts timing function)
7-8	N.O. timed
8-9	N.C. timed
10-11	N.O. timed
11-12	N.C. timed

Caution: never apply voltage to 3-4-5-6

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



Pulsed Off-On One Cycle
Maintained Off-On One Cycle
On-Off

The 1032 is easy to install or replace, keeping downtime to a minimum. The 12 pin base allows both DPDT output and remote adjust connections.

ORDERING DATA

ORDERING CODE **1032 - 1 - G - G - 8 - B**

BASIC MODEL NUMBER
1032

INPUT VOLTAGE
1 120 VAC
2 24 VAC

TIME RANGE (secs) Off Time / On Time

B .06-.25	F .06-5.0	K .5-100
C .06-.50	G .06-10.0	L .5-250
D .06-1.0	H .06-25.0	M .5-500
E .06-2.5	J .5-50.0	

Note: On and Off time ranges must have the same minimum time

TIMING FUNCTION
6 Pulsed Off/On 7 Maintained Off/On
8 On/Off

OUTPUT
B Relay DPDT

OPTION
Timing indication light (previously OP6) is now standard

ACCESSORIES
See accessory section for details

Potentiometers	RP201-RP210
Locking attachment	RP217
Reference dial	RP216
12 pin socket	RP301

(one included with unit)

Repeat Cycle

Plug-in DPDT relay output can be quickly replaced or interchanged with optional solid state output. The 1060 is especially useful in applications which require a fast timing cycle rate and numerous operations in a short period of time.

ORDERING DATA

ORDERING CODE **1060 - 1 - F - F - 1 - B**

BASIC MODEL NUMBER
1060

INPUT VOLTAGE
1 120VAC

TIME RANGE (Secs) † ON time † OFF time

D	0.06-1.0	J	0.5-50
E	0.06-2.5	K	0.5-100
F	0.06-5.0	L	0.5-250
G	0.06-10	M	0.5-500
H	0.06-25		

NOTE: † On and Off times must have same minimum time.

TIMING FUNCTION
1 Repeat cycle start Off
2 Repeat cycle start On

OUTPUT
B Relay DPDT
(solid state outputs available as accessories)

APPLICABLE ACCESSORIES
See accessory section for details

Output modules	RP-101, RP-103
Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

OUTPUT
TYPE: Electromechanical relay (solid state available as an accessory)
RATING: 10A @ 240VAC maximum

TIMING
TYPE: Repeat cycle (start ON or start OFF)
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
INDICATION: Optional LED - ON when output energized
TIMING RAMP: 0.06 sec min time - 100kΩ/sec
0.5 sec min time - 10kΩ/sec
TIME RANGE: 0.06 to 500 secs in 9 ranges
RANGE TOLERANCE: ≤ 10% at max, ≤ 0% at min
CONTROL: Isolated contact closure
CONTROL TERMINALS: E-F
VOLTAGE PRESENT AT CONTROL TERMINALS: 24VDC minimum, 40VDC maximum

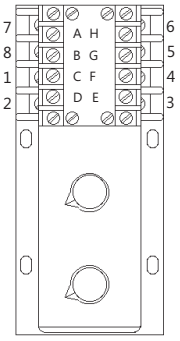
PHYSICAL
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMPERATURE: ± 5% max
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal

WIRING

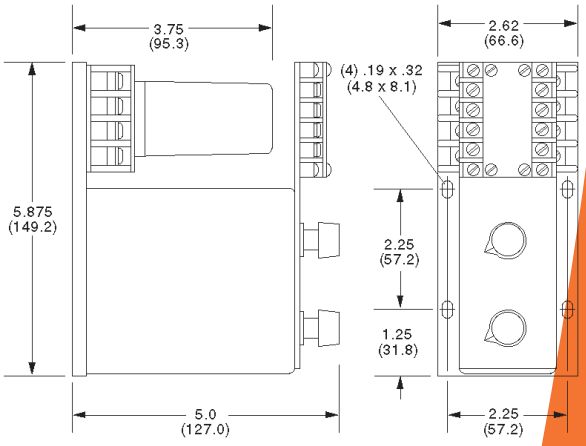
OUTPUT B
A-B Voltage input (constant)
C-D Remote adjust for first time period (jumper if not used)
E-F Control (starts timing function)
G-H Remote adjust for second time period (jumper if not used)
1-3 N.O. timed
1-4 N.C. timed
5-8 N.C. timed
6-8 N.O. timed

Caution: Never apply voltage to C-D-E-F-G-H

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



MODEL 1061
BASE MOUNT

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

OUTPUT
TYPE: Solid state
RATING: C output 35VA continuous,
150VA in-rush @ 120VAC
C2A output 5A continuous,
12.5A in-rush @ 120VAC

TIMING
TYPE: Repeat cycle (start ON or start OFF)
INDICATION: Optional incandescent light - ON when output energized
TIMING RAMP: 0.06 sec min time - 100kΩ/sec
0.5 sec min time - 10kΩ/sec
TIME RANGE: 0.06 to 500 secs in 9 ranges
RANGE TOLERANCE: ≤ 10%
CONTROL: Isolated contact closure
CONTROL TERMINALS: E-F
VOLTAGE PRESENT AT CONTROL TERMINALS:
Same as input voltage
24VDC minimum, 40VDC maximum (OP7)

PHYSICAL
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

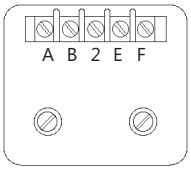
WIRING

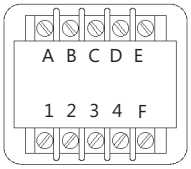
A-B Voltage input (constant)
E-F Control (starts timing function)
B-2 N.O. timed output

OPTION 3
A-B Voltage input (constant)
C-D Remote adjust for ON time, (jumper if not used)
E-F Control (starts timing function)
3-4 Remote adjust for OFF time, (jumper if not used)
B-2 N.O. timed

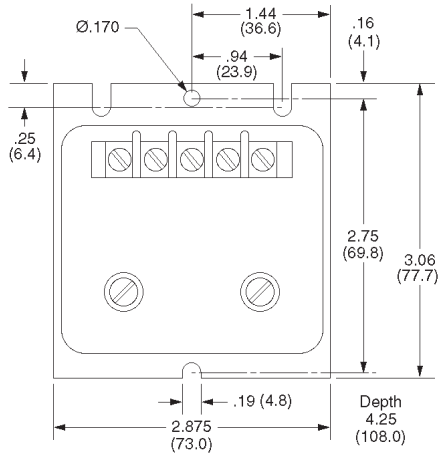
Caution: Never apply voltage to terminals E-F

Wiring Terminal Location





DIMENSIONS Inches (millimeters)



Repeat Cycle

Totally Solid State design eliminates moving parts and provides reliable, long-lasting performance.
Internal Wiring supplies input power directly to timed output terminals, eliminating the need for an external jumper.

UL File No. E50957

ORDERING DATA

ORDERING CODE **1061 - 1 - E - E - 2 - C OP6**

BASIC MODEL NUMBER
1061

INPUT VOLTAGE
1 120VAC

TIME RANGE (Secs) † ON time † OFF time

D	0.06-1.0	J	0.5-50
E	0.06-2.5	K	0.5-100
F	0.06-5.0	L	0.5-250
G	0.06-10	M	0.5-500
H	0.06-25		

NOTE: † On and Off times must have same minimum time.

TIMING FUNCTION
1 Repeat cycle start Off
2 Repeat cycle start On

OUTPUT
C Solid State (AC) 1 N.O. 35VA
C2A* Solid State (AC) 1 N.O. 5A (start off only)

OPTION (if desired)
OP3* Omit both potentiometers and add remote adjust terminals
OP6 Timing indication light
OP7 DC control for rapid recycle - 0.05 sec
**Not available on UL units*

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

On Delay

Multi-Range unit is programmable for 8 different time ranges. The 1071 reduces inventory requirements by offering the time range capacity of eight separate timers in one unit.

Input Power Actuates timing sequence, eliminating the need for a separate control circuit. Removing power automatically resets timing sequence.

Input Is Compatible with both standard mechanical switches and solid state proximity sensors.

UL File No. E50957

CSA File No. LR92815

ORDERING DATA

ORDERING CODE 1071 - 2 - P - 1 - A

BASIC MODEL NUMBER
1071

INPUT VOLTAGE
1 120VAC
2 24VAC/DC

TIME RANGE (Secs)
P (includes the following time ranges)

0	200-2000	4	0.75-7.5
1	50-500	5	0.2-2.0
2	12-120	6	0.06-.5
3	3-30	7	0.025-0.13

switch positions 8 and 9 not used

Consult factory for longer time ranges.

TIMING FUNCTION
1 On delay

OUTPUT
A* Relay SPDT w/ remote adjust (8 pin plug)
B Relay DPDT (8 pin plug)
C* Relay SPDT w/remote adjust (11 pin plug)
*Units with remote adjust do not include a potentiometer in the timer. A separate 100kΩ potentiometer must be used with a maximum length of 12 feet of shielded twisted pair wire.

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometer	RP-204
Reference dial	RP-216
Locking attachment	RP-217
8 pin socket	RP-302
11 pin socket	RP-303
Hold down clip	RP-305

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC/DC, 24VAC/DC
FREQUENCY: 50/60 Hz or DC
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 4 VA maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 5A @ 240VAC maximum

TIMING
TYPES: On delay
REPEAT ACCURACY: ± 0.5 % of setting or 0.004 secs, whichever is greater.
RESET TIME: 40 msec minimum
INDICATION: LED - ON when timing
TIMING RATIO: 10 to 1 potentiometer
TIME RANGE: 8 per unit
RANGE TOLERANCE: ±10% typical
CONTROL: Power actuated or AC proximity sensor
CONTROL TERMINALS: 2-7 (8 pin unit) 2-10 (11 pin unit)
VOLTAGE PRESENT AT CONTROL TERMINALS: Same as input voltage

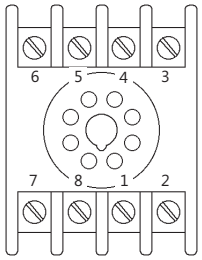
PHYSICAL
OPERATING TEMP: -20° to 70° C (-4° to 158°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Plug-in
TERMINATION: 8 or 11 pin socket
HOUSING: Plastic

WIRING

Wiring Terminal Location

OUTPUT A
2-7 Voltage input (control)
1-3 N.O. timed
1-4 N.C. timed
5-6 Remote adjust
8 Not used

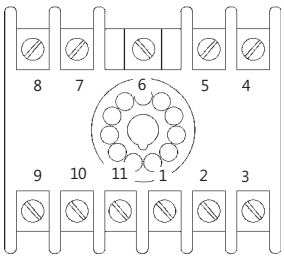
Caution: Never apply voltage to 5-6



OUTPUT B
2-7 Voltage input (control)
1-3 N.O. timed
1-4 N.C. timed
8-6 N.O. timed
8-5 N.C. timed

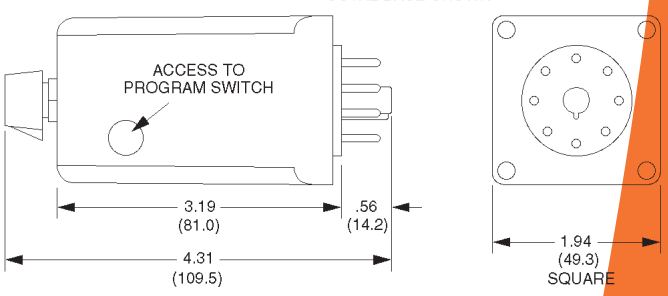
OUTPUT C
2-10 Voltage input (control)
1-3 N.O. timed
1-4 N.C. timed
11-9 N.O. timed
11-8 N.C. timed
5-6 Remote adjust
7 Not used

Caution: Never apply voltage to 5-6



DIMENSIONS Inches (millimeters)

OCTAL BASE SHOWN



INDUSTRIAL SOLID STATE TIMER

SPECIFICATIONS

INPUT
VOLTAGE: 24 to 140 VAC/DC or 100 to 240 VAC/DC
FREQUENCY: 50/60 Hz or DC
TOLERANCE (VOLTAGE): ±10% of nominal
POWER CONSUMPTION: 1VA maximum
TRANSIENT PROTECTED

OUTPUT
TYPE: Solid State N.O.
RATING: 1A @ 240VAC/DC max. (10A 1 cycle surge)
VOLTAGE DROP: 2.5 volts typical at 1A

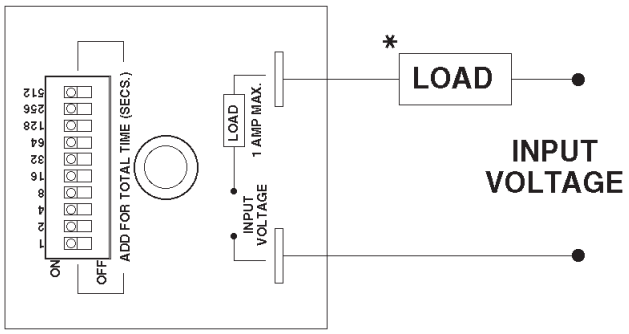
TIMING
TYPE: On delay
REPEAT ACCURACY: ≤ 0.5%
RESET TIME: ≤ 50 msec
TIME RANGE: 0.1 to 10230 seconds in 3 ranges
TOLERANCE: ± 5%
CONTROL: Power applied to input initiates timing cycle

PHYSICAL
OPERATING TEMP: -40° to +80°C (-40° to +175°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Surface with #8 or #10 screw
TERMINATION: 0.250 inch male quick connect terminals
HOUSING: Plastic

On Delay

The 2110 features simple two-wire installation. The compact encapsulated timer is switch programmable from 0.1 to 10230 seconds in three time ranges. Two power supply ranges cover operating voltages from 24 to 240 VAC/DC with a reliable 1 Amp solid state output.

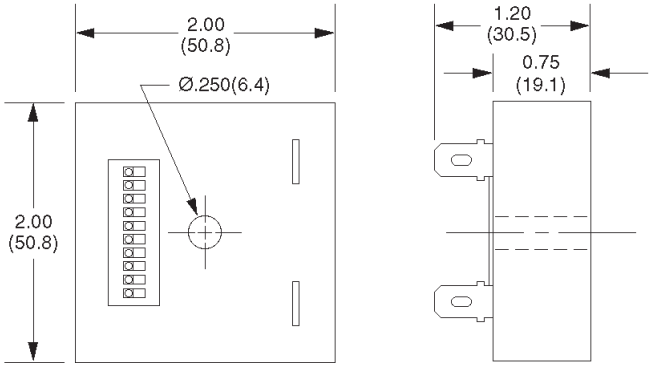
WIRING



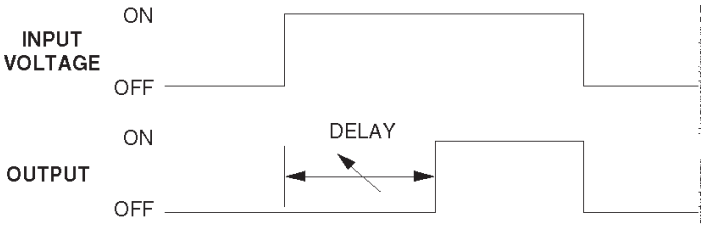
*Load may be connected to either side of line.

***WARNING*: Connection of power without a series load will cause permanent damage.**

DIMENSIONS Inches(millimeters)



OPERATION



ORDERING DATA

ORDERING CODE **2110 - 1 - B - 1 - C**

BASIC MODEL NUMBER
2110

INPUT VOLTAGE
1 24 to 140VAC/DC
2 100 to 240VAC/DC

TIME RANGE in seconds
A 0.1 to 102.3
B 1.0 to 1023
C 10 to 10230

TIMING FUNCTION
1 On delay

OUTPUT
C Solid state N.O. 1 Amp max.

SPECIFICATIONS

INPUT

VOLTAGE: 18V to 64V AC/DC
100VDC to 345VDC
90VAC to 260VAC
POWER CONSUMPTION: 16 W maximum
TRANSIENT PROTECTION: TVS

OUTPUT

TYPE: Electromechanical relay
RATING: 3A @ 150 VDC maximum
10A @ 240 VAC 80% PF maximum

TIMING

AVAILABLE TYPE: On delay
REPEAT ACCURACY: ± 1% of setting
RESET TIME: 50 msec minimum
TIME RANGE: 1.5 to 120 cycles in 4 ranges or
0.5 to 300 sec in 4 ranges
RANGE TOLERANCE: ≤ 10%

PHYSICAL

OPERATING TEMP: -40° to 65° C (-40° to 150°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount, Zinc Plated Steel
TERMINATION: Terminal blocks on face of timer
HOUSING: Powder Coated Steel
HI-POT: 1500V terminals to case, 1200V between open contacts

NOTE: Never apply HI-POT voltage across terminals A&B, 1&2, or D&4.

WIRING

OUTPUT A

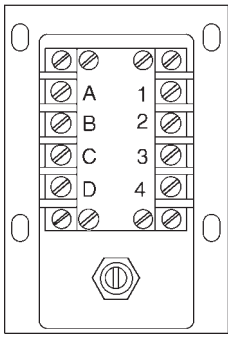
A-B	Voltage input
1-2	N.C. timed(1 positive)
3-4	N.O. timed(4 positive)

OUTPUT B

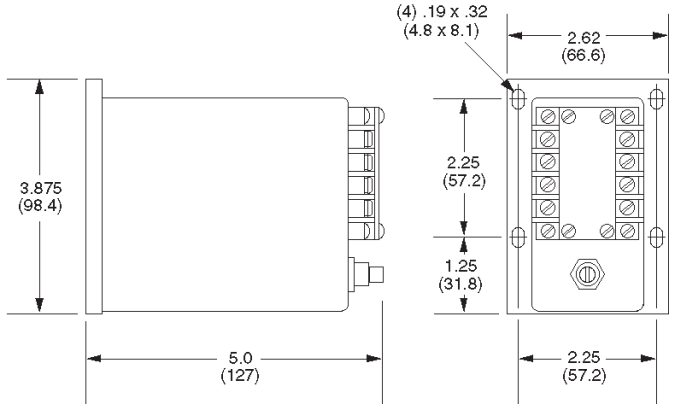
A-B	Voltage input
2-1	N.C. timed(2 positive)
2-3	N.O. timed(2 positive)
D-4	N.C. timed(D positive)
D-C	N.O. timed(D positive)

In DC applications indicated polarity provides optimum arc suppression

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



Continous Duty Rated- On Delay

The 1505 is an on delay timer, built specifically for **continuos duty**, for electric utility applications capable of high voltage DC switching. It is equipped with transient protection and housed in a metal enclosure for maximum noise immunity. The timing dial is calibrated in AC cycles at 60Hz. or seconds.

ORDERING DATA

ORDERING CODE **1505 - B - 4 - B**

BASIC MODEL NUMBER
1505

INPUT VOLTAGE
A 18V to 64V AC/DC
B 100V to 345V DC
90V to 260V AC

TIME RANGE

1	1.5-30 Cycles*	7	0.5-30 Seconds
2	1.5-45 Cycles*	8	0.5-60 Seconds
3	1.5-60 Cycles*	9	0.5-120 Seconds
4	1.5-120 Cycles*	10	0.5-300 Seconds

(*Cycles at 60Hz)

TIMING FUNCTION
On delay

OUTPUT
A Relay 1 N.O., 1 N.C.
B Relay DPDT

ACCESSORIES
See accessory section for details

Locking attachment RP-217

Up to 345VDC Continuous Duty Timer

Maintained Interval

The 2115 features a simple three-wire installation. The compact encapsulated timer is switch programmable from 0.1 to 10230 seconds in three time ranges. Two power supply ranges with a reliable 1 Amp solid state output.

UL File No. E50957

CSA File No.LR 92815-3

SPECIFICATIONS

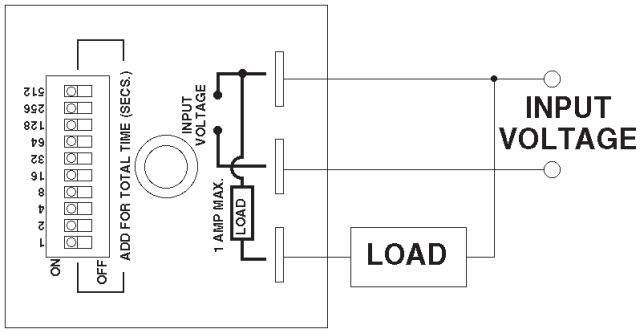
INPUT
- **VOLTAGE:** 120 VAC or 240 VAC
- **FREQUENCY:** 50/60 Hz
- **TOLERANCE (VOLTAGE):** ±15% of nominal
- **POWER CONSUMPTION:** 1VA maximum
- **TRANSIENT PROTECTED**

OUTPUT
- **TYPE:** Solid State N.O.
- **RATING:** 1A @ 240VAC/DC max. (10A 1 cycle surge)
- **VOLTAGE DROP:** 2.5 volts typical at 1A

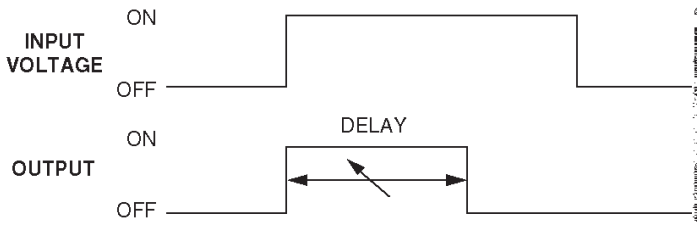
TIMING
- **MAINTAINED TYPE:** Interval
- **REPEAT ACCURACY:** ≤ 0.5%
- **RESET TIME:** ≤ 150 msec
- **TIME RANGE:** 0.1 to 10230 seconds in 3 ranges
- **TOLERANCE:** ± 5%
- **CONTROL:** Power applied to input initiates timing cycle

PHYSICAL
- **OPERATING TEMP:** -40° to +60°C (-40° to +140°F)
- **TIMING VARIATION VS. TEMP:** ± 5% maximum
- **MOUNTING:** Surface with #8 or #10 screw
- **TERMINATION:** 0.250 inch male quick connect terminals
- **HOUSING:** Plastic

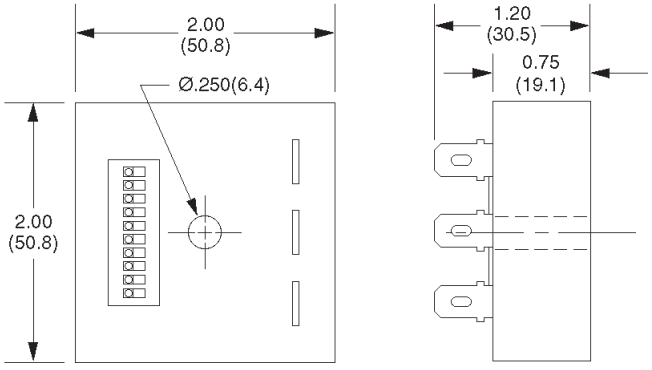
WIRING



OPERATION



DIMENSIONS Inches(millimeters)



ORDERING DATA

ORDERING CODE **2115 - 2 - B - 5 - C**

BASIC MODEL NUMBER
2115

INPUT VOLTAGE
1 120VAC
2 240VAC

TIME RANGE in seconds
A 0.1 to 102.3
B 1.0 to 1023
C 10 to 10230

TIMING FUNCTION
5 Maintained Interval

OUTPUT
C Solid state N.O. 1 Amp max.

Repeat Cycle

The 1068 features repeat cycle operation in a compact, plug-in unit, ON and OFF times are independently adjustable in 16 programmable time ranges from 0.1 seconds to 500 hours. An auto-calibrating dial provides direct reading of time setting in every range. Operating voltage options are available from 12VDC to 240VAC. LED indicators for output on and output off complete the package. Now available with plug-in or screw terminal base.

SPECIFICATIONS

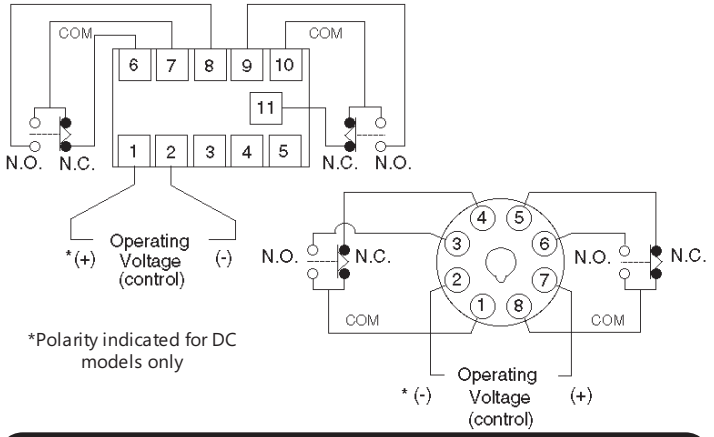
INPUT
- **VOLTAGE:** 100-240 VAC, 24 VAC/DC, 12VDC
- **FREQUENCY:** 50/60 Hz (AC models)
- **TOLERANCE (VOLTAGE):** - 15% to + 10% of nominal
- **POWER CONSUMPTION:** 10VA (100-240 VAC)
  2.5VA (24 VAC)
  2W (12 VDC & 24VDC)
- **TRANSIENT PROTECTION:** MOV

OUTPUT
- **TYPE:** Electromechanical relay
- **MECHANICAL LIFE:** 20,000,000 operations
- **ELECTRICAL LIFE:** 100,000 operations minimum (at full rated load)
- **RATING:** 5A @ 240VAC (resistive)

TIMING
- **TYPE:** Repeat Cycle
- **REPEAT ACCURACY:** ± 0.3% of setting
- **TIMING RANGE:** 0.1 secs to 500 hours in 16 ranges
- **RESET TIME:** 300 msec minimum

PHYSICAL
- **OPERATING TEMP:** -10° to 50° C (14° to 122°F)
- **TIMING VARIATION VS. TEMP:** ± 2% maximum
- **MOUNTING:** Plug-In or Panel mount
- **TERMINATION:** 8 pin socket or screw terminals
- **HOUSING:** Polycarbonate
- **DEGREE OF PROTECTION:** IP50(std), IP65(special)

WIRING



ORDERING DATA

ORDERING CODE **1068 - 1 - P - 9 - B - 1 - 1**

BASIC MODEL NUMBER
1068

INPUT VOLTAGE
1 120-240 VAC
3 24 VAC/DC
5 12 VDC

TIME RANGE
P (Includes the following ranges)

seconds	minutes	hours	10 hours
0.1 to 1.0	0.1 to 1.0	0.1 to 1.0	1.0 to 10
0.5 to 5.0	0.5 to 5.0	0.5 to 5.0	5.0 to 50
1.0 to 10	1.0 to 10	1.0 to 10	10 to 100
5.0 to 50	5.0 to 50	5.0 to 50	50 to 500

TIMING FUNCTION
9 Repeat Cycle

OUTPUT
B Relay DPDT

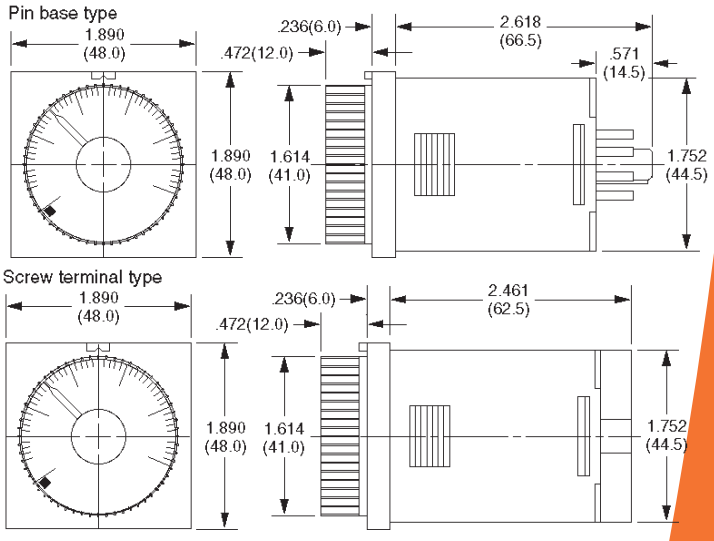
TERMINATION
1 8 pin plug-in base
2 Screw terminals

DEGREE OF PROTECTION
1 IP50 Standard
2 IP65 Sealed unit(special order only)

APPLICABLE ACCESSORIES
See accessory section for details

8 pin socket	RP-320
8 pin reversible socket	RP-321
8 pin cable socket	RP-323
Panel mount clip	RP-325
Stop rings	RP-327

DIMENSIONS Inches (millimeters)



On Delay Only or Multifunction

The 1073 is available with a choice of on delay only or 5 programmable functions. Auto-calibrating dial provides direct reading of time in each of 16 programmable time ranges from 0.1 seconds to 500 hours. The on delay only version has a DPDT timed output while the programmable unit has an SPDT timed plus SPDT instantaneous contacts. Operating voltage options are available from 12VDC to 240VAC. LED indicators for Power and Operate complete the package. Now available with plug-in or screw terminal base.

ORDERING DATA

ORDERING CODE **1073 - 1 - P - 2 - A - 1 - 1**

BASIC MODEL NUMBER
1073

INPUT VOLTAGE
1 120-240 VAC
3 24 VAC/DC
5 12 VDC

TIME RANGE
P (Includes the following ranges)

seconds	minutes	hours	10 hours
0.1 to 1.0	0.1 to 1.0	0.1 to 1.0	1.0 to 10
0.5 to 5.0	0.5 to 5.0	0.5 to 5.0	5.0 to 50
1.0 to 10	1.0 to 10	1.0 to 10	10 to 100
5.0 to 50	5.0 to 50	5.0 to 50	50 to 500

TIMING FUNCTION and OUTPUT
1 - B On delay with Relay DPDT
2 - A Programmable, 5 functions with 1 SPDT Instant relay and 1 SPDT Timed relay. Includes On Delay, Repeat Cycle Off Start, Repeat Cycle On Start, One Shot Maintained Interval and One Cycle Maintained Interval

TERMINATION
1 8 pin plug-in base
2 Screw terminals

DEGREE OF PROTECTION
1 IP50 Standard
2 IP65 Sealed unit(special order only)

APPLICABLE ACCESSORIES
See accessory section for details

8 pin socket	RP-320
8 pin reversible socket	RP-321
8 pin cable socket	RP-323
Panel mount clip	RP-325
Stop rings	RP-327

SPECIFICATIONS

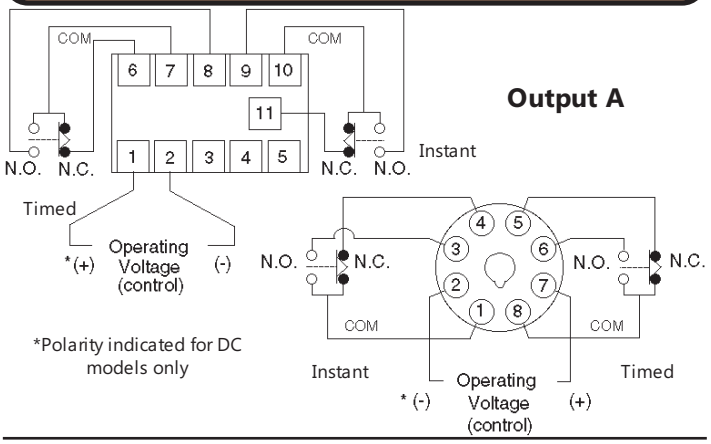
INPUT
VOLTAGE: 100-240 VAC, 24 VAC/DC, 12VDC
FREQUENCY: 50/60 Hz (AC models)
TOLERANCE (VOLTAGE): - 15% to + 10% of nominal
POWER CONSUMPTION: 10VA (100-240 VAC)
2.5VA (24 VAC)
2W (12 VDC & 24VDC)
TRANSIENT PROTECTION: MOV

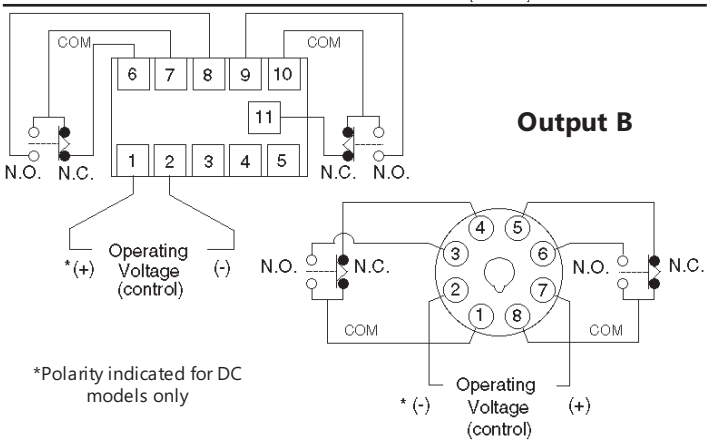
OUTPUT
TYPE: Electromechanical relay
MECHANICAL LIFE: 20,000,000 operations
ELECTRICAL LIFE: 100,000 operations minimum (at full rated load)
RATING: 5A @ 240VAC (resistive)

TIMING
TYPE: On Delay Only or Programmable (programmable includes On Delay, Repeat Cycle Off Start, Repeat Cycle On Start, One Shot Maintained Interval and One Cycle Maintained Interval)
REPEAT ACCURACY: ± 0.3% of setting
TIMING RANGE: 0.1 secs to 500 hours in 16 ranges
RESET TIME: 100 msec minimum

PHYSICAL
OPERATING TEMP: -10° to 50° C (14° to 122°F)
TIMING VARIATION VS. TEMP: ± 2% maximum
MOUNTING: Plug-In or Panel mount
TERMINATION: 8 pin socket or screw terminals
HOUSING: Polycarbonate
DEGREE OF PROTECTION: IP50(std), IP65(special)

WIRING





DIMENSIONS Inches (millimeters)

Same dimensions as 1068 on previous page

SPECIFICATIONS

INPUT

VOLTAGE: 100-120VAC, 200-240VAC, 24VAC, 24VDC, 12VDC
FREQUENCY: 50/60 Hz (AC models)
TOLERANCE (VOLTAGE): - 15% to +10% of nominal
POWER CONSUMPTION: 5VA (AC models)
2W (DC models)
TRANSIENT PROTECTION: MOV

OUTPUT

TYPE: Electromechanical relay
MECHANICAL LIFE: 10,000,000 operations
ELECTRICAL LIFE: 100,000 operations minimum (at full rated load)
RATING: 3A @ 240VAC (resistive)

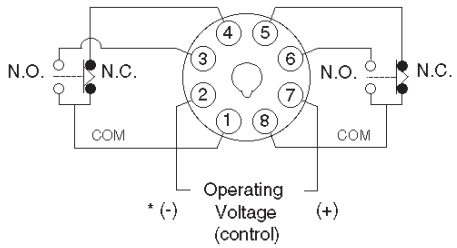
TIMING

TYPE: True Off Delay
REPEAT ACCURACY: ± 0.3% of setting
TIMING RANGE: 0.04 secs to 10 secs or 0.04 min to 10 min
RESET TIME: 100 msec at maximum time setting

PHYSICAL

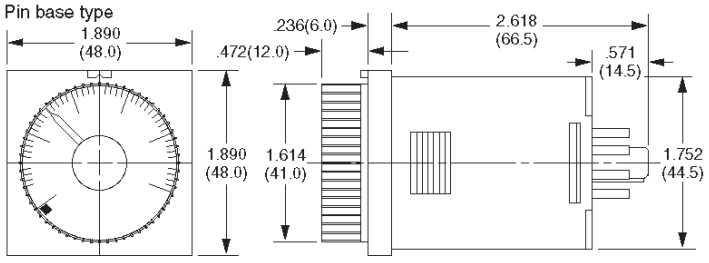
OPERATING TEMP: -10° to 50° C (14° to 122°F)
TIMING VARIATION VS. TEMP: ± 2% maximum
MOUNTING: Plug-In or Panel mount
TERMINATION: 8 pin socket
HOUSING: Polycarbonate
DEGREE OF PROTECTION: IP50(std), IP65(special)

WIRING



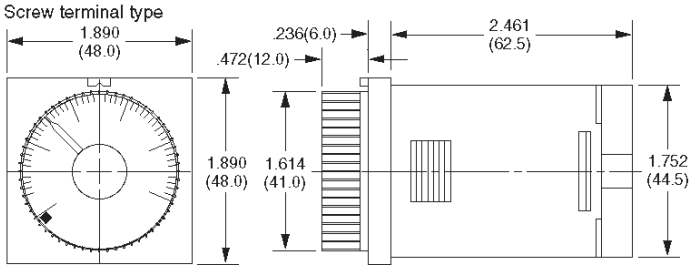
DIMENSIONS Inches (millimeters)

Pin base type



NOTE: 1081 is not available with screw terminals, dimensions shown for 1090 only

Screw terminal type



True Off Delay

The 1081 is a true off delay. Removal of input power actuates timing sequence eliminating the need for a separate control circuit. Two timing range options provide operation from 0.04 seconds to 10 minutes. Auto-calibrating dial provides direct reading of time setting in every range. A wide range of operating voltage options support operation from 12VDC to 240VAC, an LED indicates power is applied.

ORDERING DATA

ORDERING CODE 1081 - 2 - A - 2 - B - 1

BASIC MODEL NUMBER
1081

INPUT VOLTAGE
1 120 VAC
2 240 VAC
3 24 VAC
4 24 VDC
5 12 VDC

TIME RANGE
A (Includes the following ranges)
0.04 sec - 1 sec
0.2 sec - 5 sec
0.4 sec - 10 sec
B (Includes the following ranges)
0.04 min - 1 min
0.2 min - 5 min
0.4 min - 10 min

TIMING FUNCTION
2 Off delay

OUTPUT
B Relay DPDT

DEGREE OF PROTECTION
1 IP50 Standard
2 IP65 Sealed unit(special order only)

APPLICABLE ACCESSORIES
See accessory section for details

8 pin socket	RP-320
8 pin reversible socket	RP-321
8 pin cable socket	RP-323
Panel mount clip	RP-325
Stop rings	RP-327

MODEL 1090
DIN PANEL MOUNT

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

Multifunction
Multiple Time Ranges

The 1090 features 8 programmable timing functions. An auto-calibrating dial provides direct reading of time setting in each of 16 programmable time ranges from 0.1 seconds to 500 hours. Operating voltage options cover 12VDC to 240VAC. LED indicators for Power and Contact status.

ORDERING DATA

ORDERING CODE 1090 - 3 - P - 3 - B - 1 - 1

BASIC MODEL NUMBER
1090

INPUT VOLTAGE
1 120-240 VAC
3 24 VAC/DC
5 12 VDC

TIME RANGE
P (Includes the following ranges)

seconds	minutes	hours	10 hours
0.1 to 1.0	0.1 to 1.0	0.1 to 1.0	1.0 to 10
0.5 to 5.0	0.5 to 5.0	0.5 to 5.0	5.0 to 50
1.0 to 10	1.0 to 10	1.0 to 10	10 to 100
5.0 to 50	5.0 to 50	5.0 to 50	50 to 500

TIMING FUNCTION
3 Programmable, includes On Delay, Off Delay, Repeat Cycle Off Start, Repeat Cycle On Start, Pulse One-shot, One-shot On/Off, One-shot Off/On and One Cycle Maintained Interval

OUTPUT
B Relay DPDT

TERMINATION
1 11 pin plug-in base
2 Screw terminals

DEGREE OF PROTECTION
1 IP50 Standard
2 IP65 Sealed unit(special order only)

APPLICABLE ACCESSORIES
See accessory section for details

11 pin socket	RP-322
11 pin cable socket	RP-324
Panel mount clip	RP-325
Stop rings	RP-327

SPECIFICATIONS

INPUT
VOLTAGE: 100-240 VAC, 24 VAC/DC, 12VDC
FREQUENCY: 50/60 Hz (AC models)
TOLERANCE (VOLTAGE): - 15% to + 10% of nominal
POWER CONSUMPTION: 10VA (100-240 VAC)
2.5VA (24 VAC)
2W (12 VDC & 24VDC)
TRANSIENT PROTECTION: MOV

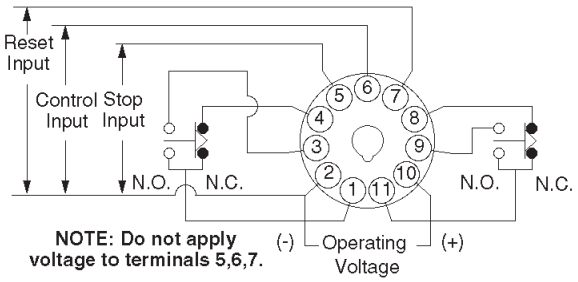
OUTPUT
TYPE: Electromechanical relay
MECHANICAL LIFE: 20,000,000 operations
ELECTRICAL LIFE: 100,000 operations minimum (at full rated load)
RATING: 5A @ 240VAC (resistive)

TIMING
TYPE: Multifunction programmable (On Delay, Off Delay, Repeat Cycle Off Start, Repeat Cycle On Start, Pulse One-shot, One-shot On/Off, One-shot Off/On and One Cycle Maintained Interval)
REPEAT ACCURACY: ± 0.3% of setting
TIMING RANGE: 0.1 secs to 500 hours in 16 ranges
RESET TIME: 100 msec minimum

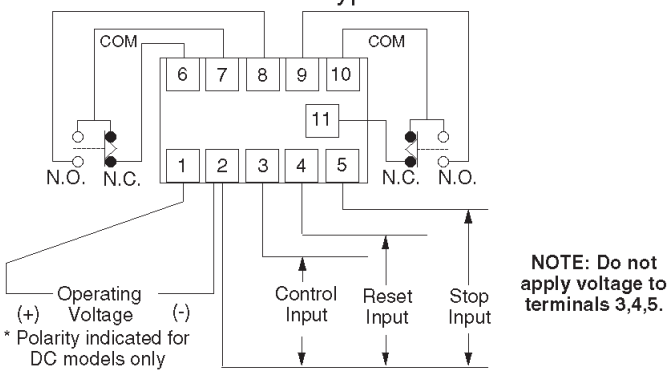
PHYSICAL
OPERATING TEMP: -10° to 50° C (14° to 122°F)
TIMING VARIATION VS. TEMP: ± 2% maximum
MOUNTING: Plug-In or Panel mount
TERMINATION: 11 pin socket or screw terminals
HOUSING: Polycarbonate
DEGREE OF PROTECTION: IP50(std), IP65(special)

WIRING

Pin base type



Screw terminal type



Control,Reset and Stop input is accomplished by isolated contact closure between indicated terminals.

DIMENSIONS Inches (millimeters)

Same dimensions as 1081 on previous page

SPECIFICATIONS

INPUT

VOLTAGE: 100 to 240VAC/DC or 12 to 24VDC or 24VAC
FREQUENCY: 50/60 Hz (AC models)
POWER CONSUMPTION: 2.5VA (AC models), 2.5W (DC models)
TRANSIENT PROTECTION: MOV

OUTPUT

TYPE: Electromechanical relay or transistor
MECHANICAL LIFE: 10,000,000 operations (Relay only)
ELECTRICAL LIFE:
Relay...100,000 operations minimum (at full rated load)
Transistor...10,000,000 operations minimum
RATING: Relay...5A @ 250VAC (resistive)
Transistor...100mA, 30VDC maximum

TIMING

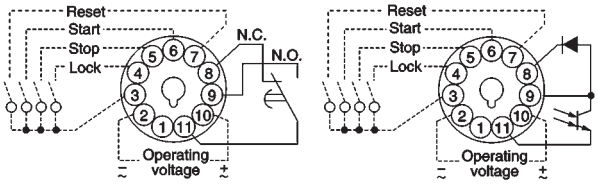
TYPE: Multifunction
REPEAT ACCURACY: ± 0.005% of setting
TIMING RANGE: 0.001 secs to 9,999 hours
RESET TIME: 20 ms

PHYSICAL

OPERATING TEMP: -10° to 50° C (14° to 122°F)
TIMING VARIATION VS. TEMPERATURE: ± .005%
MOUNTING: Plug-In or Panel mount
TERMINATION: 11 pin socket
HOUSING: Polycarbonate

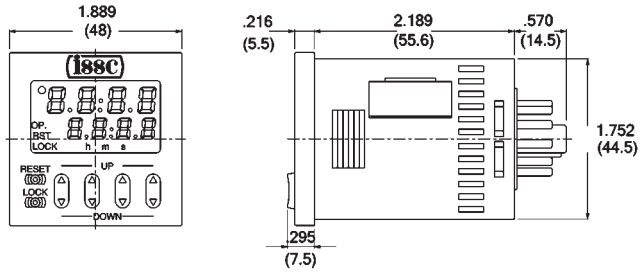
WIRING

Output A **Output C**



*Polarity indicated for DC models only

DIMENSIONS Inches (millimeters)



PROGRAMMING

See page 36 for complete programming instructions

Digital Timer

The 1094 features a large, easy to read LCD display with programmable time ranges from 0.001 seconds to 9999 hours in 8 programmable timing functions. Three power supply options are available, a wide range of 100 to 240 VAC/DC, a 12 to 24VDC and a 24 VAC only version. A battery back-up maintains memory up to 7 years. Output is an SPDT relay or open collector transistor.

ORDERING DATA

ORDERING CODE **1094 - 1 - P - 3 - A**

BASIC MODEL NUMBER
1094

INPUT VOLTAGE
1 100 thru 240VAC/DC
2 12-24VDC 3 24VAC

TIME RANGE
P (user selectable ranges)
0.001 seconds to 9,999 hours

TIMING FUNCTION
3 Programmable
A On Delay (power control)
A2 On Delay (power control)
B On Delay (isolated control)
C Off Delay
D One shot,Interval
E Pulsed On Delay,Latched output
F Repeat Cycle
G On Delay,time totalizing

OUTPUT
A Relay SPDT
C Open Collector Transistor (100mA,30VDC)

* timing function A2 retains elapsed during power off periods

APPLICABLE ACCESSORIES
See accessory section for details

11 pin socket panel mount	RP-303
11 pin socket DIN rail mount	RP-322
11 pin cable socket	RP-324
Panel mount clip	RP-325 (one included with Model1094)
Protective cover	RP-326

MODEL 1096
DIN PANEL MOUNT

INDUSTRIAL SOLID STATE TIMER

Kanson Electronics, Inc.

Digital Dual Timer

The 1096 features a large, easy to read LCD display with programmable time ranges from 0.001 seconds to 9999 hours in 6 on/off delay or repeat cycle timing functions. On time and off time are set independently. Three power supply options are available, a wide range of 100 to 240 VAC/DC, a 12 to 24VDC and a 24 VAC only version. A battery back-up maintains memory up to 7 years. Output is an SPDT relay or open collector transistor.

ORDERING DATA

ORDERING CODE 1096 - 1 - P - 3 - A

BASIC MODEL NUMBER
1096

INPUT VOLTAGE
1 100 thru 240VAC/DC
2 12-24VDC 3 24VAC

TIME RANGE
P (user selectable ranges)
0.01 seconds to 9,999 hours
T1 & T2 are independently programmable

TIMING FUNCTION
3 Programmable
Pulse A Pulsed On Delay/Off Delay One Cycle
Pulse B Repeat Cycle, Start Off
Pulse C Repeat Cycle, Start On
Total A Maintained On Delay/Off Delay One Cycle, time totalizing
Total B Repeat Cycle Start Off, time totalizing
Total C Repeat Cycle Start On, time totalizing

OUTPUT
A Relay SPDT
C Open Collector Transistor (100mA,30VDC)

APPLICABLE ACCESSORIES
See accessory section for details

8 pin socket	RP-320
8 pin reversible socket	RP-321
8 pin cable socket	RP-323
Panel mount clip	RP-325(one included)
Protective cover	RP-326

SPECIFICATIONS

INPUT
VOLTAGE: 100 to 240VAC or 12 to 24VDC or 24VAC
FREQUENCY: 50/60 Hz (AC models)
POWER CONSUMPTION: 2.5VA (AC models), 2.5W (DC models)
TRANSIENT PROTECTION: MOV

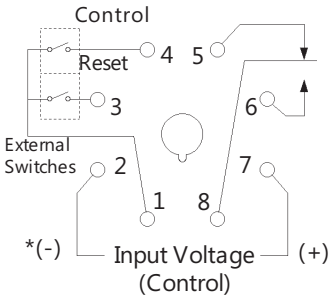
OUTPUT
TYPE: Electromechanical relay or transistor
MECHANICAL LIFE: 10,000,000 operations (Relay only)
ELECTRICAL LIFE:
Relay...100,000 operations minimum (at full rated load)
Transistor...10,000,000 operations minimum
RATING: Relay...5A @ 250VAC (resistive)
Transistor...100mA, 30VDC maximum

TIMING
TYPE: Multifunction
REPEAT ACCURACY: ± 0.005% of setting
TIMING RANGE: 0.01 secs to 9,999 hours
RESET TIME: 20 ms

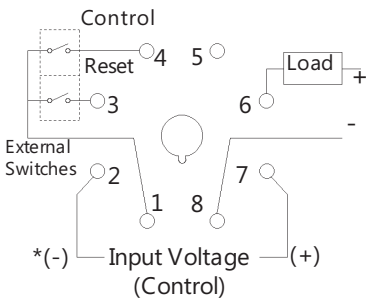
PHYSICAL
OPERATING TEMP: -10° to 50° C (14° to 122°F)
TIMING VARIATION VS. TEMPERATURE: ±.005%
MOUNTING: Plug-In or Panel mount
TERMINATION: 8 pin socket
HOUSING: Polycarbonate

WIRING

Output A



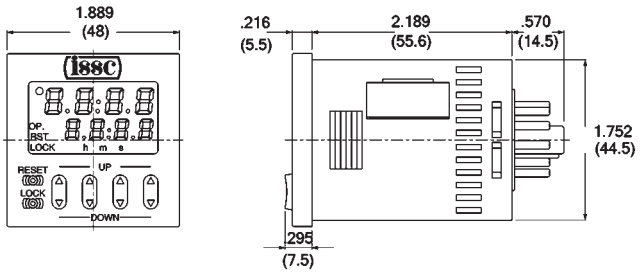
Output C



*Polarity indicated for DC models only

Do not apply voltage to pins 3 and 4, Control and Reset accomplished by isolated contact closure.

DIMENSIONS Inches (millimeters)



PROGRAMMING

See page 36 for complete programming instructions

SPECIFICATIONS

INPUT

VOLTAGE: 100 to 240VAC or 12-24VDC
FREQUENCY: 50/60 Hz (AC models)
POWER CONSUMPTION: 2.5VA (AC models), 2.5W (DC models)
TRANSIENT PROTECTION: MOV

COUNTER INPUT

TYPE: Multifunction
SPEED: 30/sec or 5000/sec
NUMBER OF INPUTS: Two
INPUT METHOD: Isolated contact or transistor

OUTPUT

TYPE: Electromechanical relay or transistor
MECHANICAL LIFE: 10,000,000 operations (Relay only)
ELECTRICAL LIFE:
Relay...100,000 operations minimum (at full rated load)
Transistor...10,000,000 operations minimum
RATING: Relay...5A @ 250VAC (resistive
Transistor...100mA, 30VDC maximum

COUNTING

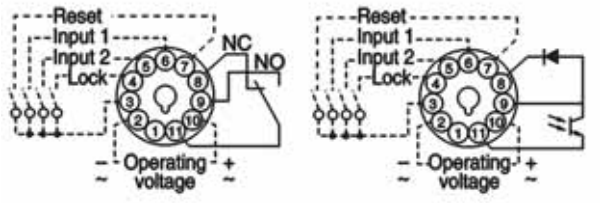
MODES: 7 (programmable)
DISPLAY: 6 digit LCD

PHYSICAL

OPERATING TEMP: -10° to 50° C (14° to 122°F)
MOUNTING: Plug-In or Panel mount
TERMINATION: Relay output - 11 pin socket
Transistor output - 8 pin socket
HOUSING: Polycarbonate

WIRING

Output A **Output C**

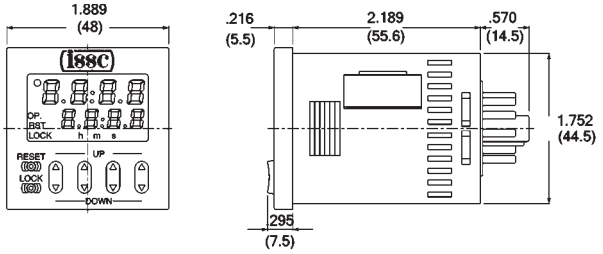


*Polarity indicated for DC models only

Do not apply voltage to pins 5,6,7

Reset and Count inputs accomplished by isolated contact closure.

DIMENSIONS Inches (millimeters)



PROGRAMMING

See page 35 for complete programming instructions

Digital Preset Counter

The 1105C features two 2 input and 5 input functions and a large, 6 digit LCD display. Two input count speeds (30/sec or 5000/sec) can be used to eliminate noise. There are 7 output functions with SPDT relay or optional transistor output. Two power supply options are available, a wide range of 100 to 240 VAC and a 12 to 24VDC only version. A battery back-up maintains memory up to 7 years.

ORDERING DATA

ORDERING CODE **1105C - 1 - P - 3 - A**

BASIC MODEL NUMBER
1105C

INPUT VOLTAGE
1 100-240 VAC
2 12-24VDC

TIME RANGE
P (Includes the following modes)
UP Counts Up
DOWN Counts Down
DIR Directional Count
IND Independent Inputs
PHASE Phased Inputs

TIMING FUNCTION
3 Programmable
Hold A Latched Output/Hold count
Hold B Latched Output/Over count
Hold C Latched (one count)/Over count
Shot A One Shot/Continue count
Shot B One Shot/Reset "On"
Shot C One Shot/Reset "Off"
Shot D One Shot/Hold count

OUTPUT
A Relay SPDT
C Open Collector Transistor (100mA,30VDC)

APPLICABLE ACCESSORIES
See accessory section for details

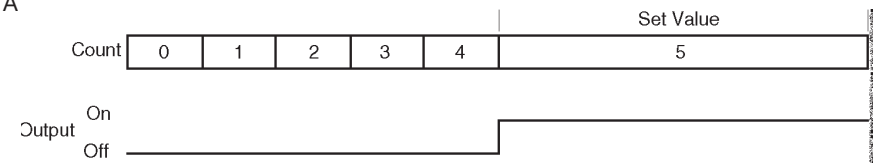
11 pin socket	RP-322
11 pin cable plug	RP-324
Panel mount clip	RP-325 (one included)
Protective cover	RP-326

INPUT OPERATION

INPUT FUNCTION	OPERATION DESCRIPTION
UP Count up to set value	• Input 1 is count input • Input 2 inhibits count input
DOWN Count down from set value	• Input 1 is count input • Input 2 inhibits count input
DIR Directional Count. Count Up or Count Down	• Input 1 is count input • Input 2 controls direction of count. With no input on 2 count is Up. With an input on 2 count is Down.
IND Independent inputs	• Input 1 is Count Up • Input 2 is Count Down
PHASE Phasing of inputs determines count direction	• If Input 1 is phased ahead of Input 2 count is Up • If Input 2 is phased ahead of Input 1 count is Down

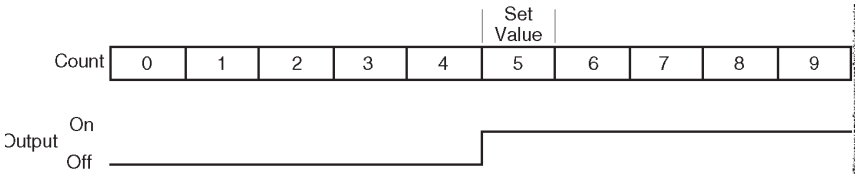
OUTPUT OPERATION

Hold A



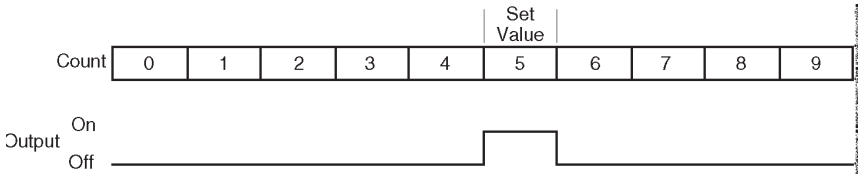
- Upon counting to set value, output latches On and count input is inhibited.
- Output remains on until reset.

Hold B



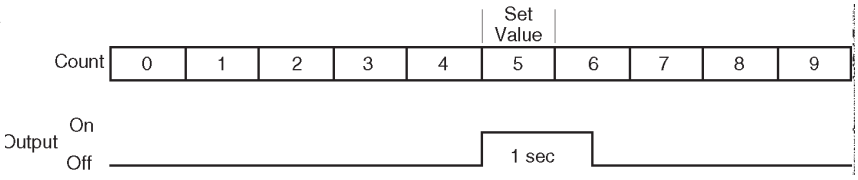
- Upon counting to set value, output latches On but the count continues to increment.
- Output remains on until reset.

Hold C



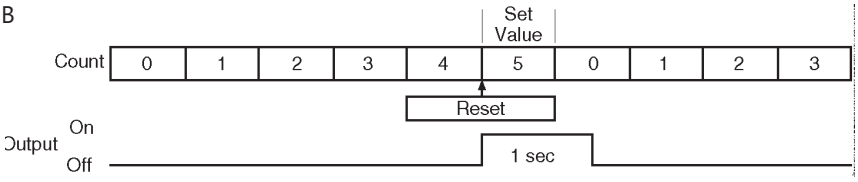
- Upon counting to set value, output turns On.
- Output turns Off at next count following set value
- Count continues to increment.

Shot A



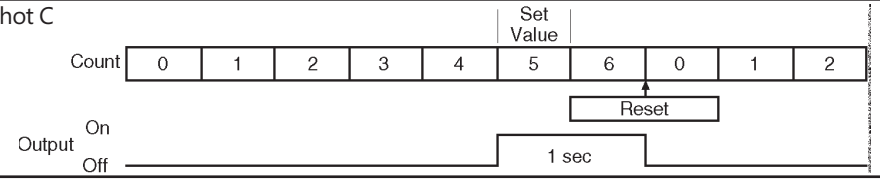
- Upon counting to set value, output turns On for approximately 1 second.
- Count continues to increment.

Shot B



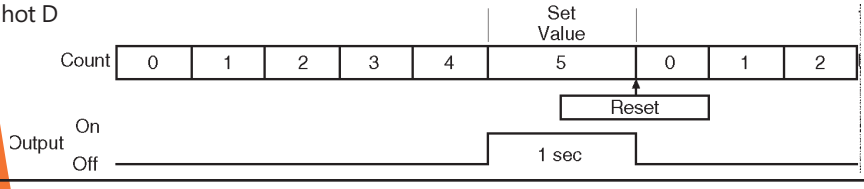
- Upon counting to set value, output turns On for approximately 1 second and the count is automatically reset.
- Count may be continued from this point with no requirement for external reset.

Shot C



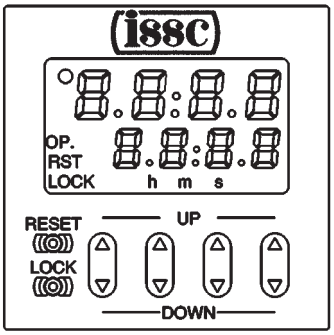
- Upon counting to set value, output turns On for approximately 1 second.
- Count automatically resets at the same time the output turns Off.

Shot D

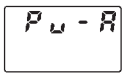


- Upon counting to set value, output turns On for approximately 1 second.
- Count input is inhibited while output is On.
- Count automatically resets at the same time the output turns Off.

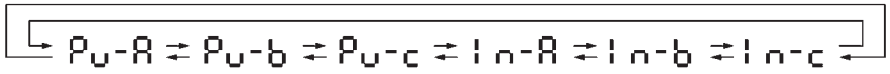
1094/1096 PROGRAMMING



1) Setting or changing the operational mode
1. When the UP or DOWN key at the first digit is pressed with the set/lock switch pressed, the mode is changed over to the setting mode.

Ex: Setting mode display 

2. The operational mode in the setting mode is changed over sequentially in the left or right direction by pressing the up or down key at the first digit, respectively.



Pu-A	Pu-b	Pu-c	In-A	In-b	In-c
Pulse input OFF-start One operation	Pulse input OFF-start Repeating operation	Pulse input ON-start Repeating operation	Integrating input OFF-start One operation	Integrating input OFF-start Repeating operation	Integrating input ON-start Repeating operation

3. The operational mode displayed at present is set by pressing the RESET key, and the display returns to the normal condition.

2) Checking the operational mode
When the UP or DOWN key at the second digit is pressed with the set/lock switch pressed, the operational mode can be checked.
The display returns to the normal condition after indicating the operational mode for about two seconds. (While the display indicates the operational mode for about two seconds, the other indicators continue to operate normally.)

3) Setting the lock
When the UP or DOWN key at the fourth digit is pressed with the set/lock switch pressed, all keys on the unit are locked.
The timer does not accept any of UP, DOWN and RESET keys.
To release the lock setting, press the UP or DOWN key at the fourth digit again with the set/lock switch pressed.
* Operational mode, adding and subtracting and minimum input signal range cannot be set at T_1 and T_2, respectively.

4) Changing over the T_1/T_2 setting display
The T1/T2 setting display is changed over by pressing the SET/LOCK switch. (This operation gives no effect on the other operations. The set time and elapsed time (residual time) at T_1 are linked with those at T_2.)

• Changing the set time
1. It is possible to change the set time with the up and down keys even during time delay with the timer. However, be aware of the following points.
   1) If the set time is changed to less than the elapsed time with the time delay set to the addition direction, time delay will continue until the elapsed time reaches full scale, returns to zero, and then reaches the new set time. If the set time is changed to a time above the elapsed time, the time delay will continue until the elapsed time reaches the new set time.
   2) If the time delay is set to the subtraction direction, time delay will continue until "0" regardless of the new set time.
2. When the set times at T_1 and T_2 are set to 0, the output becomes ON only while the signal input is carried out. However, while the reset input is carried out, the output becomes OFF.

DIP switches

	Item	DIP switch OFF	DIP switch ON
1	Operation mode	Refer to table 1	
2			
3			
4	Minimum input reset, signal, and stop signal width	20 ms	1 ms
5	Time delay direction	Addition	Subtraction
6			
7	Timer range	Refer to table 2	
8			

* The 8-pin type does not have the stop input, so that the dip switch can be changed over between reset and signal inputs. The signal range of the lock input is fixed (minimum 20 ms).

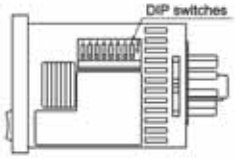


Table 1: Setting the timer range (Timer T_1)

DIP switch No. 1	2	3	Timer range
ON	ON	ON	0.01 s to 99.99 s
OFF	OFF	OFF	0.1 s to 999.9 s
ON	OFF	OFF	1 s to 9999 s
OFF	ON	OFF	0 min 01 s to 99 min 59 s
ON	ON	OFF	0.1 min to 999.9 min
OFF	OFF	ON	0 h 01 min to 99 h 59 min
ON	OFF	ON	0.1 h to 999.9 h
OFF	ON	ON	1 h to 9999 h

Table 2: Setting the timer range (Timer T_2)

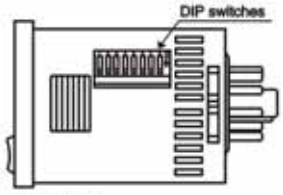
DIP switch No. 6	7	8	Timer range
ON	ON	ON	0.01 s to 99.99 s
OFF	OFF	OFF	0.1 s to 999.9 s
ON	OFF	OFF	1 s to 9999 s
OFF	ON	OFF	0 min 01 s to 99 min 59 s
ON	ON	OFF	0.1 min to 999.9 min
OFF	OFF	ON	0 h 01 min to 99 h 59 min
ON	OFF	ON	0.1 h to 999.9 h
OFF	ON	ON	1 h to 9999 h

1105C PROGRAMMING

Dip switches :

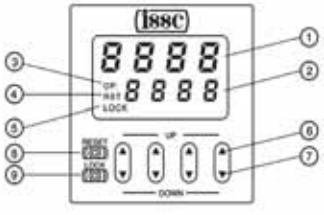
1, 2 and 3	Control the counter's 7 function options.
4	Sets minimum input signal length (reset, signal and stop).
5	Sets maximum count speed (30Hz or 5kHz).
6, 7 and 8	Control the 5 input options.

* Set dip switches before installation!



Set value is set using the toggle keys on the front of the timer.

① Counter display
② Set value display
③ Controlled output indicator
④ Reset indicator
⑤ Lock indicator
⑥ UP keys
Changes the corresponding digit of the set value in the addition direction (upwards).

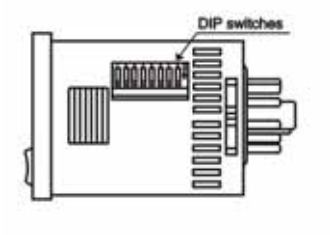


⑦ DOWN keys
Changes the corresponding digit of the set value in the subtraction direction (downwards).
⑧ RESET switch
Resets the counting value and the output.
⑨ LOCK switch
Locks the operation of all keys on the counter.

Each key is for the corresponding digit in the display.

1094 PROGRAMMING

Timing Function and Timing Ranges:

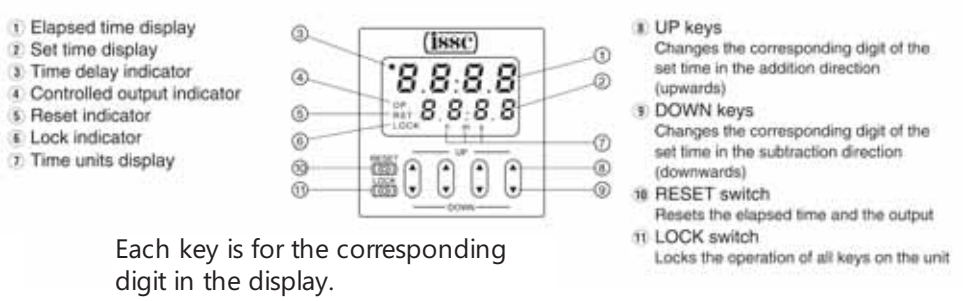


Dip switches :

1, 2 and 3	Control the timers 8 function options.
4	Sets minimum input signal length (reset, signal and stop).
5	Sets direction of time delay (addition or subtraction).
6, 7 and 8	Control the time ranges (0.001 s to 9.999 s thru 0.1 h to 999.9 h).

* Set dip switches before installation!

Setting the Time:

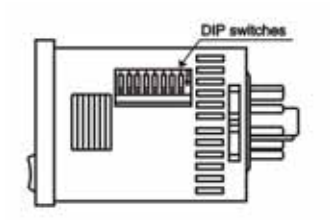


Time is set using the toggle keys on the front of the timer.

Each key is for the corresponding digit in the display.

1096 PROGRAMMING

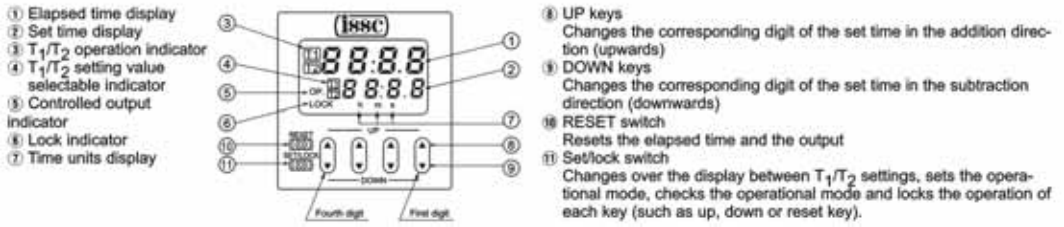
Timing Ranges:



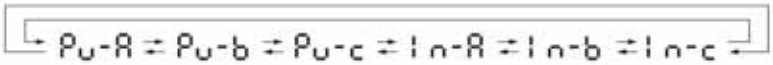
Dip switches :

1, 2 and 3	Control the time ranges for T1 (0.001 s to 9.999 s thru 0.1 h to 999.9 h).
4	Sets minimum input signal length (reset, signal and stop).
5	Sets direction of time delay (addition or subtraction).
6, 7 and 8	Control the time ranges for T2 (0.001 s to 9.999 s thru 0.1 h to 999.9 h).

* Set dip switches before installation!



Timing function representations:



Pulse ON/OFF -delay	Pulse OFF-start -delay	Pulse ON-start -delay	Total ON/OFF -delay	Total OFF-start -delay	Total ON-start -delay

SPECIFICATIONS

INPUT

VOLTAGE: 120VAC, 24VAC/DC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer (120VAC only)

OUTPUT

TYPE: Electromechanical relay
RATING: 10A - 240VAC maximum

FUNCTION

TYPE: Motion detector
TIMING RAMP: 100kΩ/sec
TIME RANGE: 0.06 to 100 secs in 10 ranges
RANGE TOLERANCE: ≤ 10% at max, ≤ 0% at min
CONTROL: Isolated contact closure (maximum resistance - 100Ω)
CONTROL TERMINALS: E-F
VOLTAGE PRESENT AT CONTROL TERMINALS: 24VDC minimum, 40VDC maximum
CYCLE TIME: Min. time control circuit closed 2msec
Min. time control circuit open 50msec
Max. control circuit pulses/sec 18

PHYSICAL

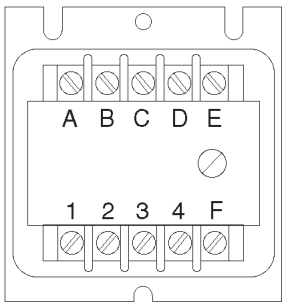
OPERATING TEMP: 0° to 50° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal

WIRING

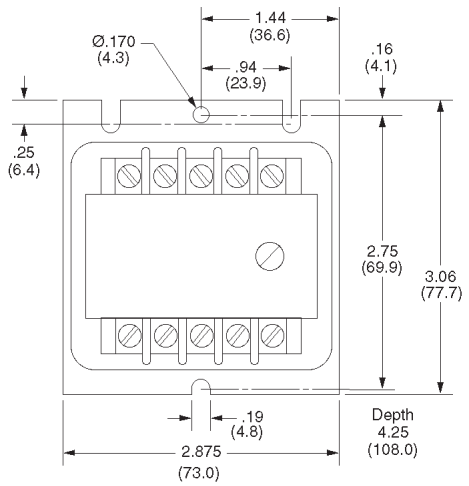
OUTPUT B,B1,B2
A-B Voltage input (constant)
C-D Remote adjust (jumper if not used)
E-F Control (resets timing function)
1-2 N.O. timed (except B2, N.C.)
3-4 N.C. timed (except B1, N.O.)

Caution: Never apply voltage to C-D-E-F

Wiring Terminal Location



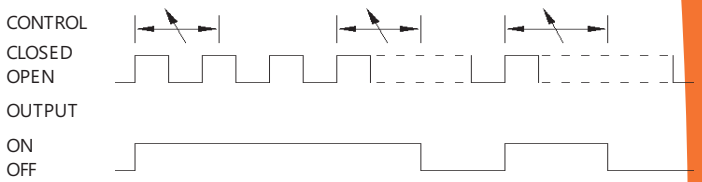
DIMENSIONS Inches (millimeters)



Underspeed Detector

Compact unit is designed for use in standard mechanical switch applications.

OPERATION



Closing the control circuit energizes the output. Opening and reclosing the control circuit before the set time interval completes keeps the output energized, and it remains energized as long as the monitored motion continues to provide at least two pulses per set time interval. If the monitored motion stops, the output de-energizes after the set time interval completes, even if motion stops in such a way that the control circuit remains closed.

ORDERING DATA

ORDERING CODE 1214 - 1 - J - B

BASIC MODEL NUMBER
1214

INPUT VOLTAGE
1 120VAC
2 24VAC / DC

TIME RANGE (Secs)

A	0.06-0.10	F	0.06-5.0
B	0.06-.25	G	0.06-10.0
C	0.06-.50	H	0.06-25.0
D	0.06-1.0	J	0.06-50.0
E	0.06-2.5	K	0.06-100

OUTPUT
B Relay 1 N.O., 1 N.C.
B1 Relay 2 N.O.
B2 Relay 2 N.C.

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

1217 Base Model (includes both)

1217P
Proximity sensor
only

1217C
Motion
Detector
only

MOTION DETECTOR
PLC WATCHDOG TIMER

The 1217 combines the control features of an underspeed motion detector and a noncontact solid state proximity sensor. It can also be used without the proximity sensor as a PLC watchdog timer.

OPERATION

The model 1217 consists of an underspeed control unit and a DC proximity sensor. The unit output relay energizes for a set time interval when it receives one control circuit pulse from the proximity sensor. A pulse consists of one opening and closing of the control circuit. Each pulse resets the time interval to zero, and the output remains energized as long as the monitored motion provides at least two pulses per set time interval. The DC proximity sensor actuates the control circuit.

The time interval is set on the unit's internal timing potentiometer. The unit output relay immediately energizes and remains energized for the set time interval when a metal object leaves the sensing field.

1) The output relay de-energizes after the set time interval completes if a metal object remains out of the sensing field.

2) The output relay de-energizes after the set time interval completes if the metal object enters and remains in the sensing field.

3) The output relay remains energized and the time interval resets to zero and begins timing again if a metal object enters and leaves the sensing field before the set time interval completes.

4) The control unit automatically completes one time interval if a metal object is not present in the sensing field when power is initially applied.

When used as a PLC watchdog the PLC provides the input pulses, application information is included on page 32.

SPECIFICATIONS 1217C

INPUT
VOLTAGE: 120VAC or 24VAC/DC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 10VA maximum
TRANSIENT PROTECTION: Transformer(120V), MOV(24V)

OUTPUT
TYPE: Electromechanical relay
MECHANICAL LIFE: 10,000,000 operations
ELECTRICAL LIFE: 500,000 operations
RATING: 10A - 1/6 HP at 120VAC, 1/3 HP at 240VAC

FUNCTION
TYPE: Underspeed motion detector/PLC watchdog
TIMING RAMP: 0.06 sec to minimum - 10K ohm/sec
0.5 sec minimum - 100K ohm/sec
TIME RANGES: 0.06 to 100 secs in 7 ranges
RANGE TOLERANCE: ≤ 10%at max, ≤0% at min
CONTROL: Isolated contact closure (max. resist. 100 Ω)
or DC proximity switch (ISSC 1217P)
CONTROL TERMINALS: D-E-F
VOLTAGE PRESENT AT CONTROL TERMINALS:
24VDC minimum, 40VDC maximum
CYCLE TIME: Minimum time control circuit closed 2ms
Minimum time control circuit open 50ms
Maximum control circuit pulses/sec 18
SENSING DISTANCE: 0.5 inch

PHYSICAL
OPERATING TEMP: 0° to 50°C (32° -120°F)
TIMER VARIATION VS. TEMPERATURE: ±5% max.
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

SPECIFICATIONS 1217P

FEATURES
VOLTAGE RANGE: 10-40VDC
MAXIMUM SWITCHING FREQUENCY: 150 pulses/sec
OUTPUT RATING: 100 mA
SENSING DISTANCE: 0.5 inch (12.7mm)
RESIDUAL VOLTAGE: ≤0.7V
SWITCHING MODE: Source/PNP
OUTPUT STATE: N.C.
INDICATOR: LED
OPERATING TEMP: -25° to 75°C (-13° to 167°F)

ORDERING DATA - COMPLETE UNIT
INCLUDES CONTROL AND PROX SWITCH

ORDERING CODE **1217 - 1 - G - B - 1**

BASIC MODEL NUMBER
1217

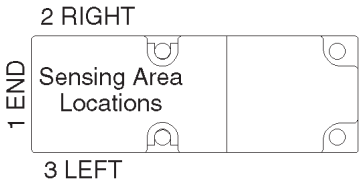
INPUT VOLTAGE
1 120VAC
2 24VAC/DC

TIME RANGE in seconds

D	0.06-1.0	H	0.06-25.0
E	0.06-2.5	J	0.06-50.0
F	0.06-5.0	K	0 .06-100
G	0.06-10.0		

OUTPUT
B Relay 1 N.O., 1 N.C.
B1 Relay 2 N.O.
B2 Relay 2 N.C.

LOCATION OF SENSING AREA
1 End
2 Right
3 Left



ORDERING DATA - CONTROL ONLY

ORDERING CODE **1217C - 1 - G - B**

BASIC MODEL NUMBER
1217C

INPUT VOLTAGE
1 120VAC
2 24VAC/DC

TIME RANGE in seconds

D	0.06-1.0	H	0.06-25.0
E	0.06-2.5	J	0.06-50.0
F	0.06-5.0	K	0 .06-100
G	0.06-10.0		

OUTPUT
B Relay 1 N.O., 1 N.C.
B1 Relay 2 N.O.
B2 Relay 2 N.C.

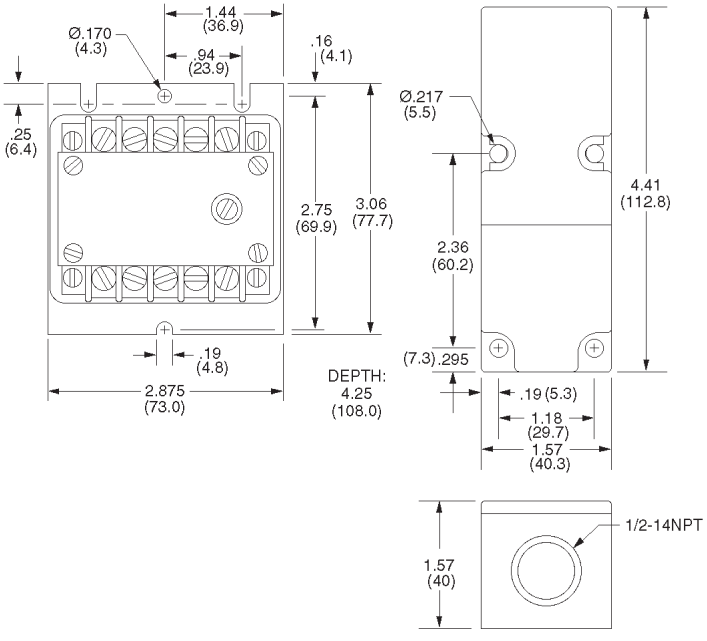
ORDERING DATA - PROX SWITCH ONLY

ORDERING CODE **1217P - 1**

BASIC MODEL NUMBER
1217P

LOCATION OF SENSING AREA
1 End
2 Right
3 Left

DIMENSIONS inches(millimeters)

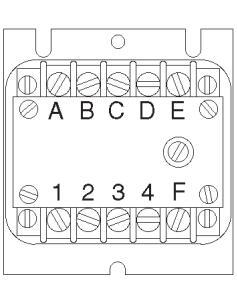


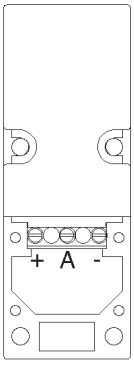
INSTALLATION RECOMMENDATION: The standard unit is insensitive to most induced voltage transients on the control leads (E-F). Although not mandatory, shielding the leads is recommended. Reasonable care should be taken to eliminate control lead runs in conduit or trays with high voltage lines(1000V or greater).

WIRING

Motion Detector

A-B	Voltage input(constant)
C	Not used
D	DC(-) to terminal - on prox sensor
E	Control to Terminal A on prox sensor
F	DC(+) to terminal + on prox sensor
1-2	N.O. timed(except B2, N.C.)
3-4	N.C. timed(except B1, N.O.)





PLC watchdog timer

A-B	Voltage input(constant)
C	Not used
D	Common on PLC
E	+24V pulsed output from PLC
F	Not used
1-2	N.O. timed(except B2, N.C.)
3-4	N.C. timed(except B1, N.O.)

MODEL 1248A
LIMIT STYLE

INDUSTRIAL SOLID STATE MOTION DETECTOR

Kanson Electronics, Inc.

Self-contained
Prox sensor and motion detector

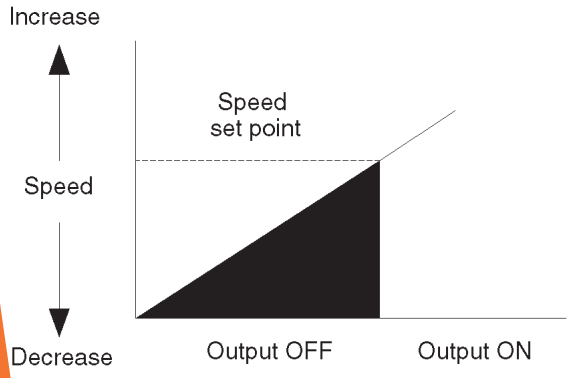
The 1248A is a self-contained combination proximity sensor and speed switch (motion detector) in easy to install limit style unit. Two-wire circuit is wired in same manner as a limit switch. A plug-in receptacle saves wiring time. There are three user selectable speed ranges that cover 5 through 7500 pulses per minute and an adjustable start time delay of 0 to 20 seconds. An LED indicates that the output is energized and a target adjustment mode aids setup.

ORDERING DATA

ORDERING CODE **1248A – 1A4P**

OPERATION

- Output de-energized when monitored motion is below speed set point
- Output energizes when monitored motion reaches or exceeds speed set point
- Energized output will not de-energize until monitored motion drops below speed set point
- Output automatically resets-energizes when monitored speed again reaches speed set point



SPECIFICATIONS

INPUT
VOLTAGE: 20 to 250 VAC/DC
FREQUENCY: 50/60 Hz or DC
LEAKAGE: ≤ 2mA
TRANSIENT PROTECTION: MOV

OUTPUT
MAX. LOAD CURRENT: 500 mA (continuous)
VOLTAGE: ≤ 9 Volts (with resistive load max. load current)
MAX. INRUSH CURRENT: 7 A
MIN. LOAD CURRENT: 5 mA

SENSING
SENSING DISTANCE: 12.7mm (0.5 in)
TARGET SIZE: 40mm x 40mm mild steel

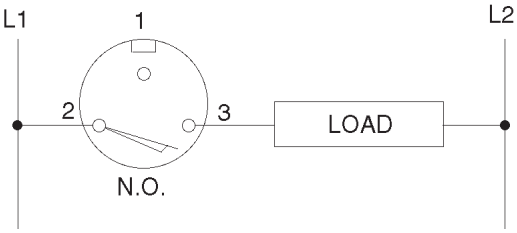
TIMING
SPEED RANGES: 3 (user selectable)
A = 5 - 75 ppm*
B = 50 - 750 ppm
C = 500 - 7500 ppm
MAX. SPEED at which sensor can detect target: 10,000 ppm
HYSTERESIS: 10% differential between pickup & dropout speeds.
RESPONSE TIME: All speed ranges 3 msec / 3 msec (target present / target absent)
DELAY IN READINESS: 100 msec (with start up delay at zero)
START UP TIME DELAY: 0 - 20 seconds. (user adjustable)

*ppm = speed (RPM) X number of targets

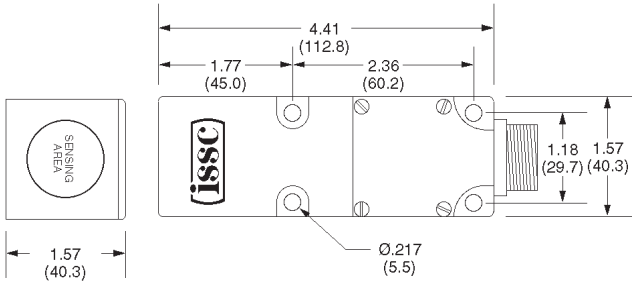
PHYSICAL
TEMPERATURE RANGE: -25˚C to +70˚C
HOUSING MATERIAL: Fire-retardant ABS/polycarbonate blend
ENVIRONMENTAL RATING: NEMA 1,3,4,6,12,13,IP67
TERMINATION: 3-Pin mini-style connector

ACCESSORIES
2 m cable with connector RP-503
5 m cable with connector RP-503-5

WIRING

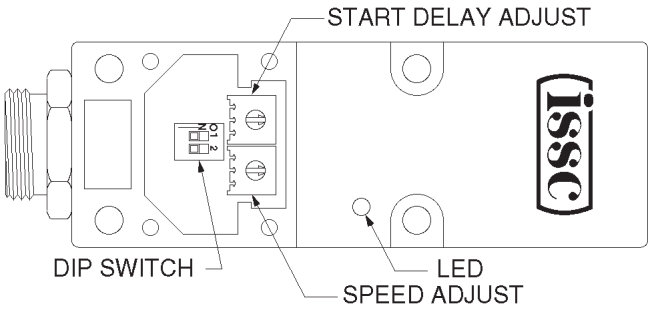


DIMENSIONS millimeters



ADJUSTMENTS

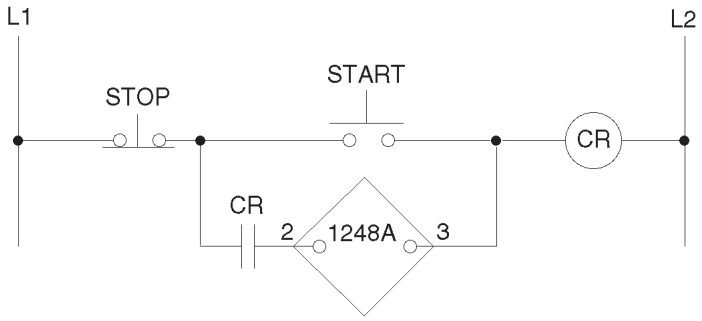
Initial Start Time Delay (0-20 Sec., Adjustable)
The 1248A is supplied with an initial start time delay which energizes the output for the time specified when power is applied to the unit. This feature provides time at start-up for the monitored equipment to reach a speed that will maintain an energized output. The output de-energizes if the speed of the monitored equipment fails to reach the set point by the end of this delay. Removing and reapplying power resets the initial time delay.



DIP switch range selection
The DIP switch selects one of the three ranges or test mode. The switches can be changed without removing power from the device. When the test mode is selected, the 1248A emulates a standard prox switch. The output comes on when the target is present. If power is applied with the switches set for test mode the 1248A enters a factory test mode. Turn off power and set switches to off to exit.

RANGE	SPEED ppm	SWITCH 1	SWITCH 2
A	5-75	OFF	OFF
B	50-750	ON	OFF
C	500-7500	OFF	ON
TEST	-	ON	ON

APPLICATION EXAMPLE



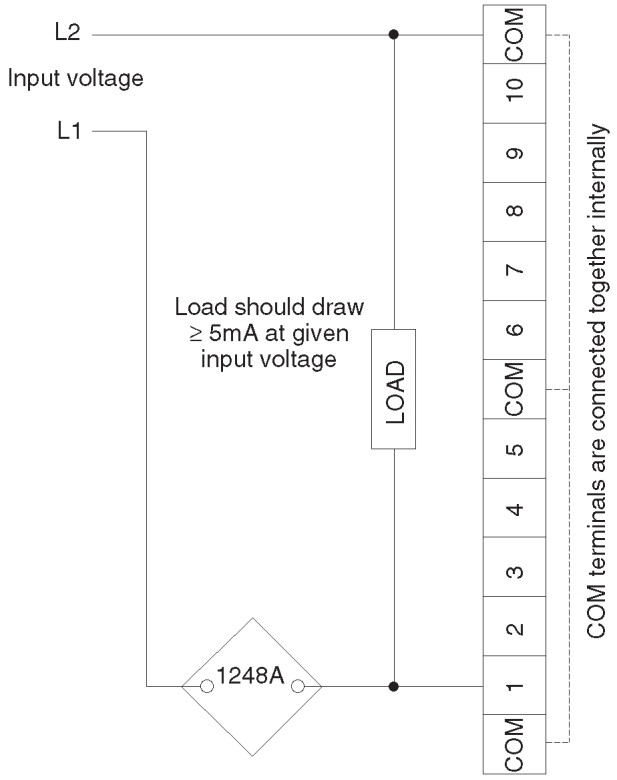
NOTE: This circuit requires the start time delay to be adjusted for no less than 1/2 sec.

SPECIAL CONSIDERATIONS FOR PLC APPLICATIONS

When using the model 1248A as a direct input to a PLC, the minimum load current specification of 5mA must be taken into consideration. Most of todays PLC's have a very high input impedance which does not allow enough current for the 1248A to operate properly.

The solution to this problem is to parallel a load (a resistor or indicator lamp) with the PLC input.

Typical PLC Application Example:



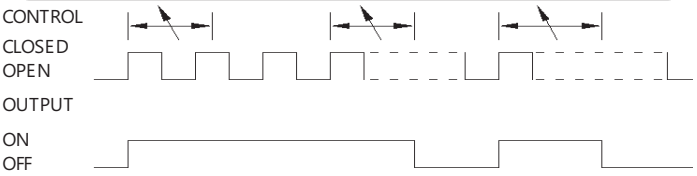
See your PLC User's Manual for specific wiring details.

INDUSTRIAL SOLID STATE MOTION DETECTOR

Underspeed Detection

AC Control Circuit is compatible with standard mechanical switches, solid state proximity sensors, and 120 VAC pulses.

OPERATION



Closing the control circuit energizes the output.

Opening and reclosing the control circuit before the set time interval completes keeps the output energized, and it remains energized as long as the monitored motion continues to provide at least two pulses per set time interval.

If the monitored motion stops, the output de-energizes after the set time interval completes, even if motion stops in such a way that the control circuit remains closed.

ORDERING DATA

ORDERING CODE **1260 - 1 - K - C**

BASIC MODEL NUMBER
1260

INPUT VOLTAGE
1 120VAC

TIME RANGE (Secs)

A	0.06-0.10	F	0.06-5.0	L	0.5-250
B	0.06-0.25	G	0.06-10.0	M	0.5-500
C	0.06-0.50	H	0.06-25.0	W	Fixed time (see note)
D	0.06-1.0	J	0.5-50.0		
E	0.06-2.5	K	0.5-100		

NOTE: Specify W and desired fixed time. Factory will set time within 5%

OUTPUT
B Relay 1 N.O., 1 N.C.
C Solid State 1 N.O., 1.5 amps AC

APPLICABLE ACCESSORIES
See accessory section for details

Potentiometers	RP-201 thru RP-210
Reference dial	RP-216
Locking attachment	RP-217

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

OUTPUT
TYPE: Electromechanical relay or solid state
RATING: 1.5A @ 120 VAC (solid state)
10A @ 240VAC maximum (electromechanical)

FUNCTION
TYPE: Motion detector
REPEAT ACCURACY: ± 1/2 % of setting
INDICATION: LED indicates unit timing and output energized
TIMING RAMP: 0.06 sec minimum time - 100kΩ/sec
0.5 sec minimum time - 10kΩ/sec
TIME RANGE: 0.06 to 500 secs in 12 ranges
RANGE TOLERANCE: ≤ 10% at maximum, ≤ 0% at minimum
CONTROL: Isolated contact closure or AC prox switch
CONTROL TERMINALS: P1-P2-L2
VOLTAGE PRESENT AT CONTROL TERMINALS:
P1-P2: Same as input voltage
L2-P2: 120VAC pulse
CYCLE TIME: Min. time control circuit closed 8 msec
Min. time control circuit open 16 msec
Max. control circuit pulses/sec 40

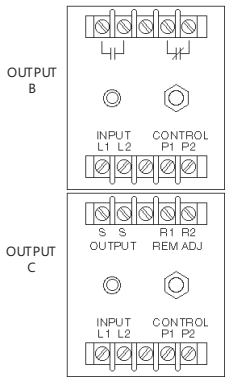
PHYSICAL
OPERATING TEMP: -32° to 71° C (-25° to 160°F)
TIMING VARIATION VS. TEMP: ± 3% maximum
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

WIRING

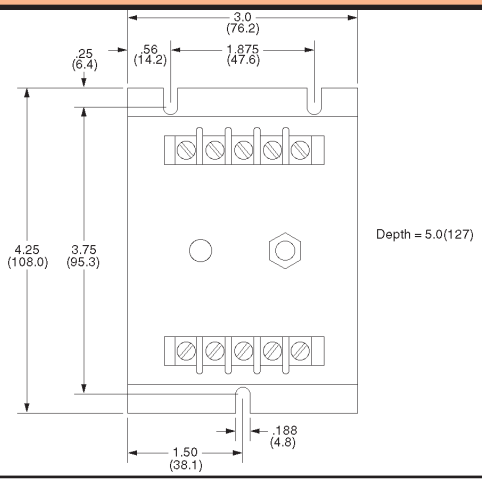
OUTPUT B
L1-L2 Voltage input (constant)
P1-P2 Control
L2-P2 120VAC Pulse
Output as shown: N.O. timed
N.C. timed
Caution: Never apply voltage to P1 (L1 internally jumpered to P1)

OUTPUT C
L1-L2 Voltage input (constant)
P1-P2 Control
L2-P2 120VAC Pulse
R1-R2 Remote adjust (jumper if not used)
S1-S2 N.O. solid state, timed
Caution: Never apply voltage to P1-R1-R2 (L1 internally jumpered to P1)

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



Adjusting Set Time Interval

A timing potentiometer sets the time interval. It is necessary to calculate the period of time between pulses to determine the correct time setting.

1) Determine minimum operating speed. This is the speed at which the output energizes. Any greater speed also maintains an energized output. Any slower speed de-energizes the output.

2) Determine pulse/sec ratio provided by minimum operating speed.

example: 2 pulses/sec

3) Determine time interval between pulses.

example: 2 pulses/sec = 1 pulse/0.5 sec

4) Adjust timing potentiometer to a setting slightly greater than 0.5 sec. Minimum operating speed (1 pulse/0.5 sec) will provide 2 pulses in a time interval slightly greater than 0.5 sec and maintain an energized output. Any speed less than the minimum operating speed will not provide two pulses per set time interval, and the unit's output will de-energize.

5) Select a time range, when ordering a 1262, in which the set time interval for minimum operating speed falls midrange. This provides better time setting resolution.

example: Set time interval - 0.55 sec
Select time range "D" - 0.06-1.0 sec)

SPECIFICATIONS

INPUT

VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

OUTPUT

TYPE: Electromechanical relay
RATING: 10A - 1/6 HP at 120VAC, 1/3 HP at 240VAC

FUNCTION

TYPE: Motion detector
REPEAT ACCURACY: ± 1% of setting
INDICATION: LED indicates unit timing and output energized
TIMING RAMP: 0.02 sec minimum time - 1MΩ/sec
0.06 sec minimum time - 100KΩ/sec
0.5 sec minimum time - 10KΩ/sec
TIME RANGE: 0.02 to 1000 secs in 13 ranges
RESPONSE TIME: Set time interval
HYSTEROSIS: ~5% between pick-up and drop-out speeds
RANGE TOLERANCE: ≤ 10% at max, ≤ 0% at min
CONTROL TERMINALS: A-B-C-D-E-F
VOLTAGE PRESENT AT CONTROL TERMINALS:
A - C : Same as input voltage
B - C : 120VAC pulse
D - E - F : 12VDC
D - E : 12VDC pulse
CYCLE TIME:

Time Range		AC Control	DC Control
A-C	Minimum time control circuit closed	8 msec	0.1 msec
	Minimum time control circuit open	16 msec	0.45 msec
	Maximum control circuit pulses/sec	40	1800
D-H	Minimum time control circuit closed	8 msec	0.1 msec
	Minimum time control circuit open	16 msec	5 msec
	Maximum control circuit pulses/sec	40	200
J-N	Minimum time control circuit closed	8 msec	8 msec
	Minimum time control circuit open	42 msec	42 msec
	Maximum control circuit pulses/sec	20	20

PHYSICAL

OPERATING TEMP: 0° to 50° C (32° to 122°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

Underspeed or Overspeed Detection

Output Energizes only when running speed is reached.

AC Control Circuit is compatible with standard mechanical switches, solid state proximity sensors, and 120VAC pulse.

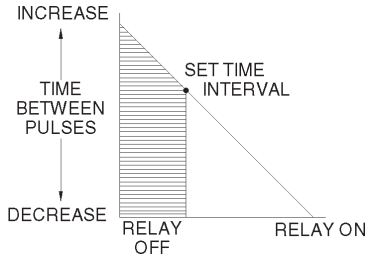
DC Control Circuit is compatible with solid state source or sink proximity sensors.

MSHA Investigation No. IA-137. The 1262 used in conjunction with the ISSC 1221 proximity sensor (see page 50) is approved by the Mine Safety and Health Administration.

CSA File No. LR92815

OPERATION

The output is de-energized when the monitored motion provides less than two pulses per set time interval. The output energizes when the monitored motion reaches or exceeds two pulses per set time interval. Once energized, the output will not de-energize until the monitored motion drops to less than two pulses per set time interval. The output automatically resets and the output energizes, when the monitored speed again matches two pulses per set time interval.



Initial Start Time Delay

The 1262 can be supplied with an initial start time delay which energizes the output for the time specified when the power is applied to the unit. This feature provides time at start up for the monitored equipment to reach a speed that will maintain an energized output. The output will de-energize, if the speed of the monitored equipment fails to reach the set point by the end of this delay. Removing and reapplying power resets the initial time delay.

1262 data continued on page 37

ORDERING DATA

ORDERING CODE 1262 - 1 - L - D - B - OP3(10)

BASIC MODEL NUMBER
1262

INPUT VOLTAGE
1 120VAC

DETECTION MODE
L Underspeed

TIME RANGE (Secs)

A	0.02-0.10	F	0.06-5.0	L	0.5-250
B	0.02-0.25	G	0.06-10.0	M	0.5-500
C	0.02-0.50	H	0.06-25.0	N	0.5-1000
D	0.06-1.0	J	0.5-50.0	W	Fixed time
E	0.06-2.5	K	0.5-100		(see note)

NOTE: Specify W and desired fixed time.
Factory will set time within 5%

OUTPUT
B Relay 1 N.O., 1 N.C.
B1 Relay 2 N.O.
B2 Relay 2 N.C

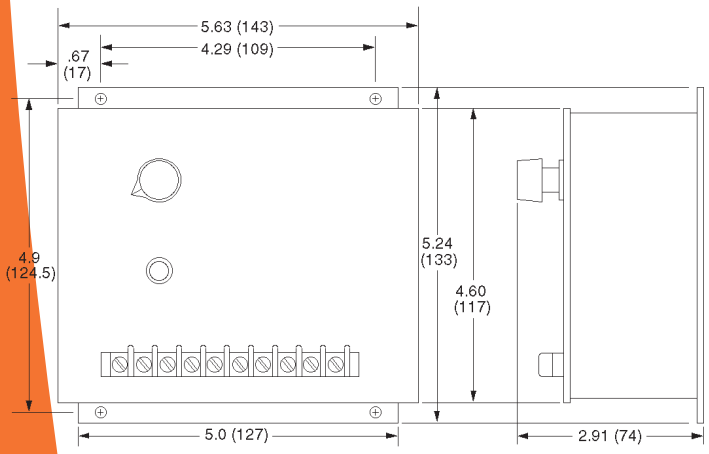
OPTION (If desired)
OP3(t) Initial start time delay. Specify in parentheses time selected from below.

1 sec	10 secs
5 secs	25 secs

SPECIAL MODEL for PLC WATCHDOG applications
ORDER NUMBER **1262-PC**
0.06-2.5 second timeout
2 second start-up delay
Relay output 1 N.O., 1 N.C.

APPLICABLE ACCESSORIES
See accessory section for details
Locking attachment RP-217

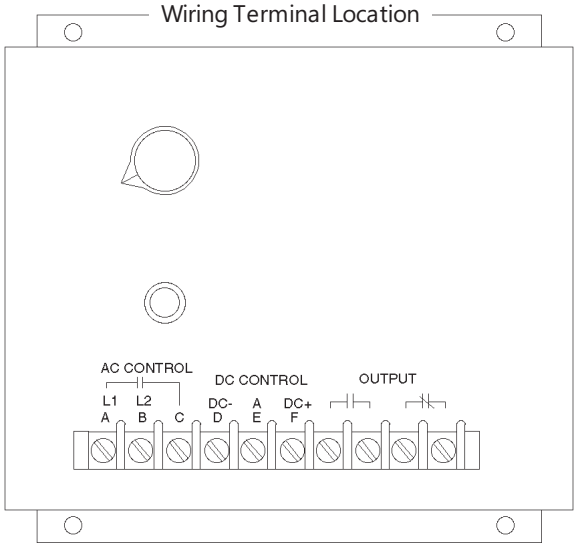
DIMENSIONS Inches (millimeters)

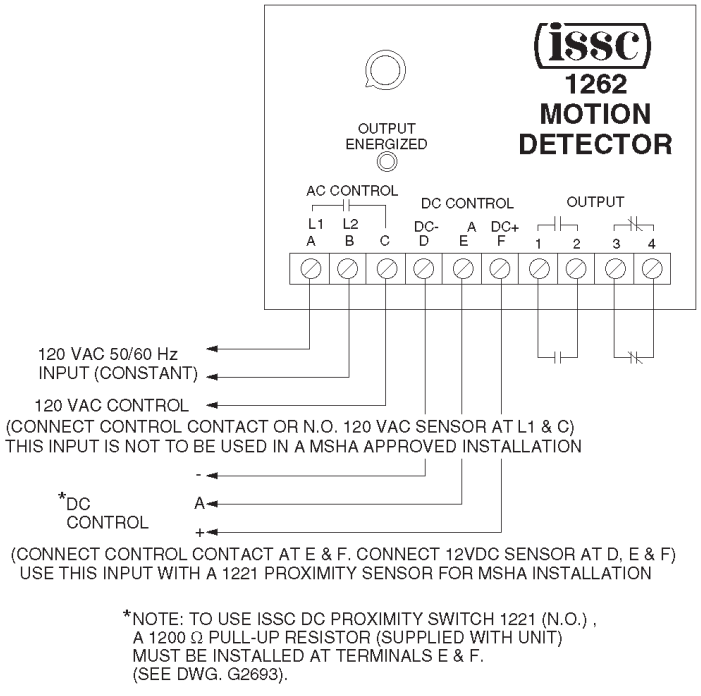


WIRING

A-B Voltage input (constant)
A-C AC Control — mechanical contact or prox sensor
B-C AC Control — 120VAC Pulse
D-E-F DC Control — source or sink* prox sensor
D- (DC-) common for prox sensor
E- (A) input for prox sensor
F- (+ 12VDC) supplied to prox sensor
D-E 12VDC Pulse
D- (DC-) Common
E- (+12VDC) Supplied by sourcing output
E-F DC Control — mechanical contact
*When using sink prox sensor, install 1200 ohm pull-up resistor (supplied with unit) at E-F.
1-2 N.O. (except B2, N.C.)
3-4 N.C. (except B1, N.O.)

Wiring Terminal Location





*NOTE: TO USE ISSC DC PROXIMITY SWITCH 1221 (N.O.) , A 1200 Ω PULL-UP RESISTOR (SUPPLIED WITH UNIT) MUST BE INSTALLED AT TERMINALS E & F. (SEE DWG. G2693).

SPECIFICATIONS

INPUT

VOLTAGE: 120VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 15% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: Isolation transformer

OUTPUT

TYPE: Electromechanical relay
RATING: 10 A @ 240VAC maximum

	Type A Resistive Sensitive 3.0kΩ	Type A Resistive Sensitive 30kΩ	Type B Resistive Sensitive 110Ω	Type C Voltage Sensitive
Control Terminals	E&F (C&D jumpered)	C&F (C&D without jumper)	E&F (C&D not used)	E(+)&F(-) (C&D not used)
Max. open circuit voltage	8VDC	40VDC	2VDC	N/A
Max. short circuit current	10mA	10mA	2.0mA	N/A
Max. control resistance to energize unit	3.0kΩ	30kΩ	110Ω	N/A
Min. control resistance to de-energize unit	6.0kΩ	45kΩ	160Ω	N/A
Max. control voltage	N/A	N/A	N/A	20VDC
Min. control voltage	N/A	N/A	N/A	1.5VDC±10%
Control point which may be grounded	E or F	E or F	F	F

Note: N/A indicates not applicable

PHYSICAL

OPERATING TEMP: 0° to 50°C (32° to 120°F)
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

WIRING

TYPE A
A-B Voltage input (constant)
C-F Control 30K (energizes output, remove jumper)
E-F Control 3K (energizes output, jumper C&D)
1-2 N.O. (except B2, N.C.)
3-4 N.C. (except B1, N.O.)

Caution: Never apply voltage to C-D-E-F

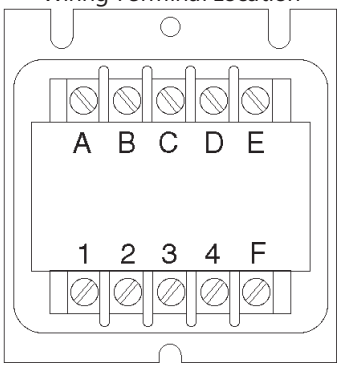
TYPE B
A-B Voltage input (constant)
C-D Not used
E-F Control (energizes output)
1-2 N.O. (except B2, N.C.)
3-4 N.C. (except B1,N.O.)

Caution: Never apply voltage to C-D-E-F

TYPE C
A-B Voltage input (constant)
C-D Not used
E-F Control E(+) F(-) (energizes output)

1-2 N.O. timed (except B2, N.C.)
3-4 N.C. (except B1, N.O.)

Wiring Terminal Location



DIMENSIONS Inches (millimeters)

Exterior dimensions same as 1214 page 30

RESISTANCE OR VOLTAGE DETECTOR

The function of a resistive sensitive relay is based on the detection of various resistance values. Output pick-up occurs when both of the unit's sensing probes come in contact with a material or liquid which provides a resistance value lower than the unit's maximum sensitivity level.

Type A resistive sensitive relay can be wired for output pick-up at a maximum resistance level of either 3,000 or 30,000 ohms.

Type B has a low maximum resistance level for output pick-up at 110 ohms. The unit can be purchased with an optional sensitivity adjustment which allows the resistance level to be set anywhere between 10 and 110 ohms. The type B is ideal in tool or work detection applications requiring coolant solutions which have low resistance.

Type C voltage sensitive relay, amplifies a low DC voltage signal by energizing a mechanical output which is capable of switching heavier voltage loads. The type C can be applied directly to the solid state output of instrumentation or logic control equipment to function as a power relay.

ORDERING DATA

ORDERING CODE **1213 - 1 - A - B - OP1**

BASIC MODEL NUMBER
1213
1213 UL

INPUT VOLTAGE
1 120VAC

TYPE
A Resistive sensitive relay with dual control points, 3K ohm or 30K ohm maximum.
*B Low resistive sensitive relay with single control point, 110 ohm maximum.
C Voltage sensitive control point, 20V maximum, 3V minimum.

OUTPUT
B Relay 1 N.O., 1 N.C., contacts electrically isolated
B1 Relay 2 N.O., contacts electrically isolated
B2 Relay 2 N.C., contacts electrically isolated

OPTIONS (if desired)
OP1 Output indication light
*OP2 Sensitivity adjustment which allows resistance level to be set anywhere between 10 and 110 ohms (type B only).

*Not available on UL units

RESISTIVE SENSITIVE SWITCH

The Resistive Sensitive Switch is a completely solid state industrial control device whose output changes state when the resistance impressed on it's input terminals matches a predetermined value. This is programmed by installing a reference resistance across input programming pins. The unit is also programmable to cause the output to turn on when input resistance is greater than the reference resistance, or to turn on when the input resistance is less than the reference resistance. Designed for service in rugged industrial control environments, it is a plug-in device which can be applied in any control scheme where a control action is required, based upon a change in electrical resistance; such as RTD, photo cells, liquid level contact, tool to work piece contact, etc. Input terminal open circuit voltage and short circuit current are limited to low levels for safety reasons.

ORDERING DATA

ORDERING CODE **1230 - 1 - D - C**

BASIC MODEL NUMBER
1230

INPUT VOLTAGE
1 120VAC

TYPE
D Resistive Sensitive Switch
(input sensitivity 1.0kΩ to 1.0MΩ)

OUTPUT
C Solid State(AC) 1 Amp, 120VAC

ACCESSORIES See accessory section for details

8 pin socket	RP-302
8 pin socket(DIN rail mount)	RP-320

SPECIFICATIONS

INPUT
VOLTAGE: 90 to 140VAC
FREQUENCY: 50/60 Hz
POWER CONSUMPTION: 20 mA
TRANSIENT PROTECTION: Transformer

OUTPUT
TYPE: N.O. Triac (optically isolated, 1500 Vrms
RATING: 1.0A rms max continuous
15A inrush (16 msec @ 60Hz)
MAX SWITCHING RATE: 30/second

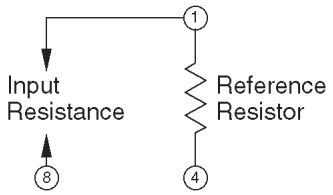
RESISTANCE INPUT
SENSITIVITY: 1.0kΩ to 1.0MΩ user programmable
OPEN CIRCUIT VOLTAGE: < 7 volts maximum
SHORT CIRCUIT CURRENT: < 5 mA maximum
HYSTERESIS: Approximately 30%

PHYSICAL
OPERATING TEMP: -25° to +70°C (-13° to 160°F)
MOUNTING: Plug-in
TERMINATION: 8 pin socket
HOUSING: Plastic

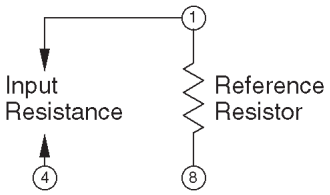
WIRING

Programming Connections

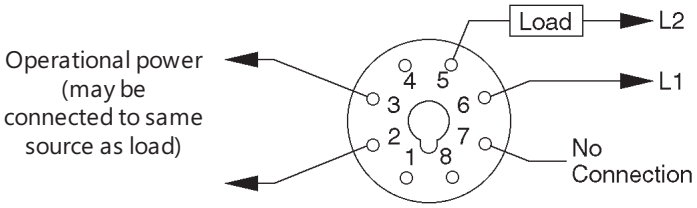
Output energizes when input resistance is lower than reference resistance set point



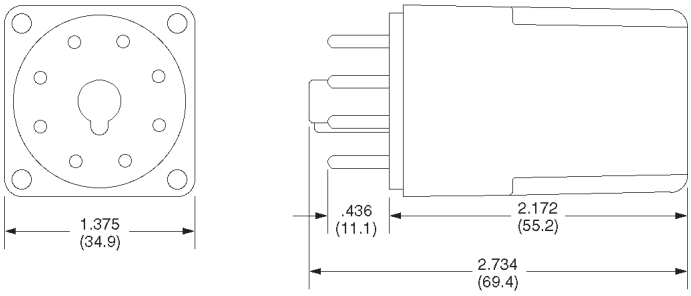
Output energizes when input resistance is higher than reference resistance set point



Power Wiring



DIMENSIONS Inches (millimeters)



SPECIFICATIONS

INPUT
VOLTAGE: 120VAC, 24VAC/DC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 10A @ 240VAC maximum

RESISTANCE INPUT
SENSITIVITY: 1.0k to 1.0M in 5 ranges
OPEN CIRCUIT VOLTAGE: 13 volts maximum
SHORT CIRCUIT CURRENT: 5 mA maximum
HYSTERESIS: Approximately 20%

TIMING
TYPE: On delay - Off delay (independently adjustable)
REPEAT ACCURACY: ≤ 0.5%
TIME RANGE: 0.05 to 1.0 seconds
CONTROL: Resistance applied to terminals C & D

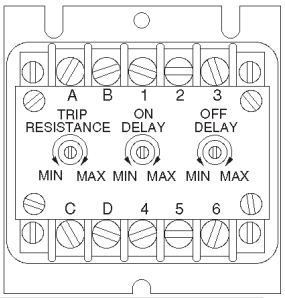
PHYSICAL
OPERATING TEMP: 0° to 70° C (32° to 120°F)
TIMING VARIATION VS. TEMP: ± 5% maximum
MOUNTING: Base mount
TERMINATION: Terminal block on face of timer
HOUSING: Metal

WIRING

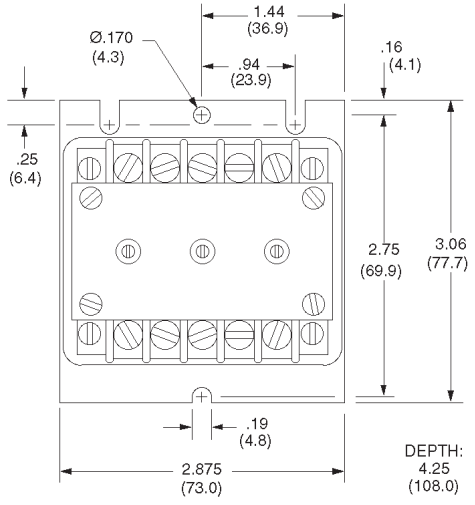
A-B	Voltage input (constant)
C-D	Control (energizes output)
1-2	N.O.
2-3	N.C.
4-5	N.O.
5-6	N.C.

Caution: Never apply voltage to terminals C & D

Wiring Terminal Location



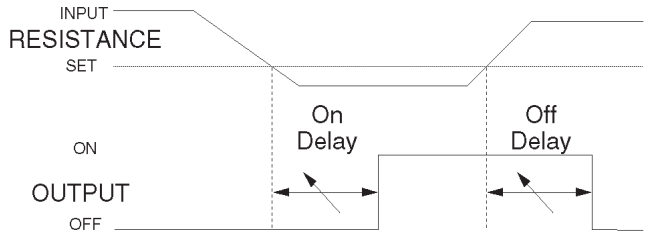
DIMENSIONS Inches (millimeters)



RESISTANCE DETECTOR WITH TIME DELAYS

The 1232 is useful where initial contact may be poor or the item to be detected may bounce against the sensing probes. Output operates when sensing probes come in contact with a material which provides a resistance value lower than the set resistance and after set on-delay. Output releases when the resistance between the sensing probes is greater than the set resistance and after set off-delay.

OPERATION



ORDERING DATA

ORDERING CODE **1232 - 1 - A - B**

BASIC MODEL NUMBER
1232

INPUT VOLTAGE
1 120VAC
2 24VAC/DC

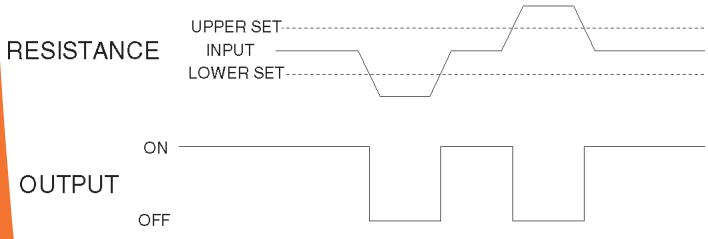
SENSING RANGE
A 1.0k - 3.0k
B 2.0k - 25k
C 20k - 250k
D 200k - 700k
E 500k - 1.0M

OUTPUT
B Relay DPDT

RESISTANCE RANGE DETECTOR

The 1234 is a 'window' type detector and can be used where fail-safe operation is required. Output is operated when sensing probes come in contact with a material which provides a resistance value between the upper and lower set resistances. Output is released when the resistance between the sensing probes is less than the lower set resistance or greater than the upper set resistance. LED indicators show low/good/high conditions. In a typical application the unit could detect a probe shorted to ground(low) or a broken wire to the probe(high).

OPERATION



ORDERING DATA

ORDERING CODE 1234 - 1 - A - B

BASIC MODEL NUMBER
1234
INPUT VOLTAGE
1 120VAC
2 24VAC/DC
SENSING RANGE
A 0Ω - 50k
OUTPUT
B Relay SPDT
OPTIONS (If desired)
OP1 Factory installed 47kΩ upper trip resistor and 3.0kΩ lower trip resistor.

SPECIFICATIONS

INPUT
VOLTAGE: 120VAC, 24VAC/DC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 10 VA maximum
TRANSIENT PROTECTION: MOV

OUTPUT
TYPE: Electromechanical relay
RATING: 10A @ 240VAC maximum

RESISTANCE INPUT
SENSE RANGE: 0Ω to >50k
UPPER SET POINT: 100Ω to 50k
LOWER SET POINT: 85Ω to 42k
must be <85% of upper point
OPEN CIRCUIT VOLTAGE: 13 VDC maximum
SHORT CIRCUIT CURRENT: 2.0 mA maximum
HYSTERESIS: Approximately 5%

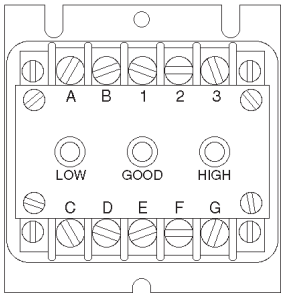
PHYSICAL
OPERATING TEMP: 0° to 70° C (32° to 120°F)
MOUNTING: Base mount
TERMINATION: Terminal blocks on face of timer
HOUSING: Metal

WIRING

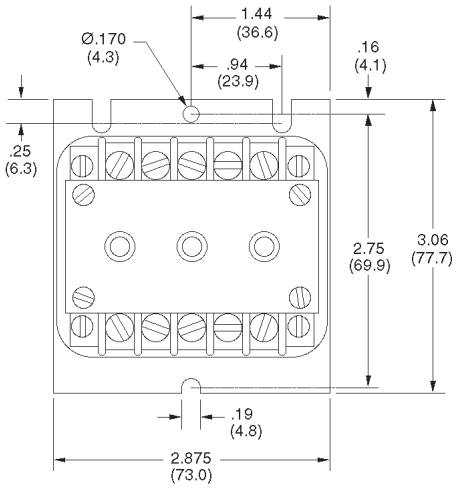
A-B	Voltage input (constant)
C-D	Sensing Input (energizes output)
E-F	Lower trip set resistance
G-F	Upper trip set resistance
1-2	N.O.
2-3	N.C.

Caution: Never apply voltage to terminals C-D-E-F-G

Wiring Terminal Location



DIMENSIONS Inches (millimeters)



SPECIFICATIONS

CIRCUIT TYPE : Normally Open Solid State Output
OPERATING VOLTAGE : 105-130 VAC 50/60 Hz
MAX. LOAD CURRENT : 12 Amps (continuous)
MAX. INRUSH CURRENT : 50 Amps (one cycle)
MIN. LOAD CURRENT : 100 mA
PROBE INPUT : Open Circuit Voltage 12VDC
Peak Current <1mA max.
TEMPERATURE RANGE : -25˚ to 70˚C (-10° to 155°F)
TERMINATION : 3-Pin Terminal strip

WIRING

TERMINAL 1 : L1 (120 VAC)
TERMINAL 2 : LOAD
TERMINAL 3: L2 (COMMON)

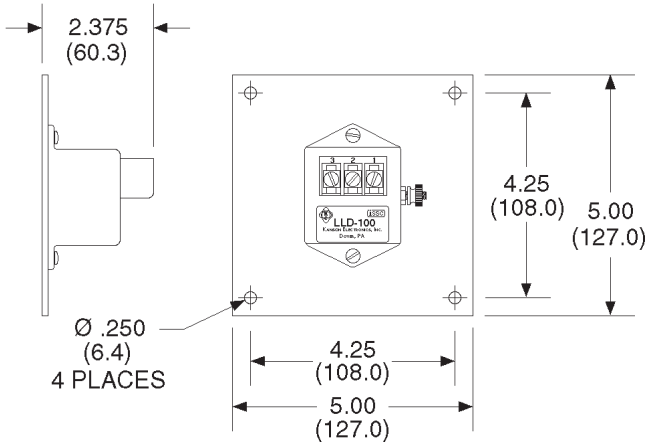
ALUMINUM MOUNTING PLATE AND LIQUID TO BE DETECTED SHOULD BE AT SAME ELECTRICAL POTENTIAL (TYPICALLY EARTH GROUND)

LLD-100

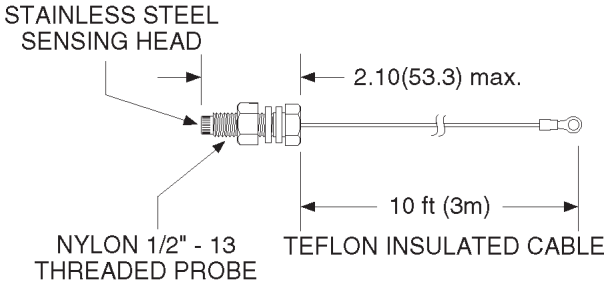
LLP-100

DIMENSIONS Inches (millimeters)

LLD-100 DETECTOR



LLP-100 PROBE



OPERATION

The LLD-100 is a resistance detector optimized to detect any conductive fluid. A typical application is to signal a high water level and activate a pump to lower the water to a safe level. Output is "off" with no conducting path from probe to aluminum mounting plate. Output is "on" when resistance between probe and aluminum mounting plate is ≤ 1MΩ.

ORDERING DATA

ORDERING CODES :

LLD - 100 Detector module

LLP - 100 Probe assembly

DC Limit Style

FEATURES

The 1221 is a low cost limit style DC, three wire, proximity switch. When used with the 1262 provides a MSHA approved motion sensing system.

ORDERING DATA

ORDERING CODE **1221 - 1 - A - 1 - A**

The 1221 is currently only available as an end sensing, NPN sinking, normally open output, 10- 26 VDC unit.

SPECIFICATIONS

INPUT

VOLTAGE: 10 to 26 VDC,10% ripple allowed
SUPPLY CURRENT: ≤ 20 mA
TRANSIENT PROTECTION: MOV

OUTPUT

MAX. LOAD CURRENT: 100 mA (continuous)

SENSING

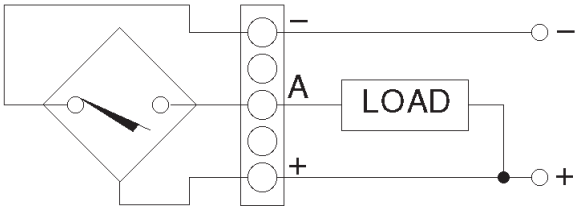
SENSING DISTANCE: 14.29 mm (0.56 in)
REPEATABILITY: ±5 mm (0.02 in)
HYSTERESIS: 3.18 mm (0.12 in)
TARGET SIZE: 40mm x 40mm x 1mm mild steel
SWITCHING FREQUENCY: 1.0 kHz maximum
RANGE DERATING:

Chrome-nickel	0.9
Brass	0.5
Aluminum	0.45
Copper	0.4

PHYSICAL

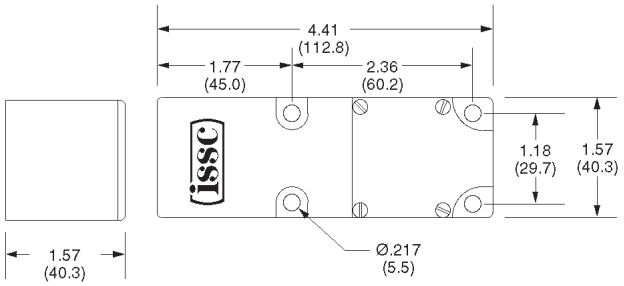
OPERATING TEMP: -20˚C to +65˚C(-4°F to +149°F)
HOUSING MATERIAL: Fire-retardant ABS/polycarbonate blend
ENVIRONMENTAL RATING: NEMA 1,3,4,6,12,13,IP67
TERMINATION: Internal terminal block

WIRING



WIRING TO INTERNAL TERMINAL STRIP

DIMENSIONS inches(millimeters)



SPECIFICATIONS

INPUT

VOLTAGE: 20 to 250 VAC/DC
FREQUENCY: 50/60 Hz or DC
LEAKAGE: ≤ 2mA
TRANSIENT PROTECTION: MOV

OUTPUT

MAX. LOAD CURRENT: 500 mA (continuous)
VOLTAGE: ≤ 9 Volts
(with resistive load max. load current)
MAX. INRUSH CURRENT: 7 A
MIN. LOAD CURRENT: 5 mA

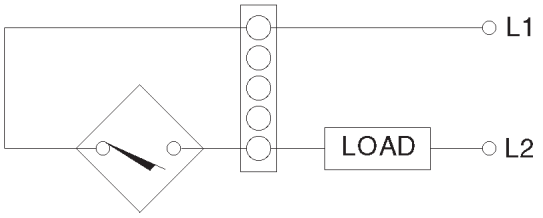
SENSING

SENSING DISTANCE: 12.7mm (0.5 in)
TARGET SIZE: 40mm x 40mm mild steel
SWITCHING FREQUENCY: 166 Hz maximum

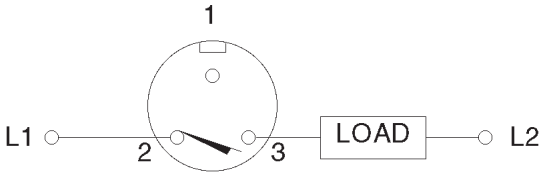
PHYSICAL

TEMPERATURE RANGE: -25˚C to +70˚C
HOUSING MATERIAL: Fire-retardant ABS/polycarbonate blend
ENVIRONMENTAL RATING: NEMA 1,3,4,6,12,13,IP67
TERMINATION: Internal terminal block or external 3-Pin mini-style connector

WIRING

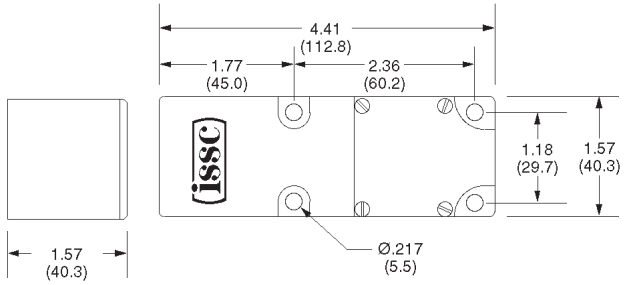


WIRING FOR INTERNAL TERMINAL STRIP



WIRING WITH EXTERNAL CONNECTOR

DIMENSIONS inches(millimeters)



AC Limit Style

FEATURES

The 1250 is a low cost limit style proximity switch using the same proven detection circuitry as our 1248A. Featuring a 20-250 VAC/DC universal input voltage and a simple two-wire connection. It is available with end, left or right sensing. Other options are a normally open or normally closed output and either an internal terminal block or a factory installed connector.

ORDERING DATA

ORDERING CODE **1250 - 1 - A - 1**

BASIC MODEL NUMBER
1250

LOCATION OF SENSING AREA
1 End
2 Right
3 Left

OUTPUT CONFIGURATION
A Normally open
B Normally closed

TERMINATION
1 Terminal block inside cover
2 Connector on end of housing

Cascadable Stepper

FEATURES

The 1050 is a totally solid state cascadable stepper. Each unit consists of an input/output (I/O) board which houses twelve output terminals and a plug-in function board which controls output function. As many as five I/O boards can be cascaded to increase the number of outputs.

ORDERING DATA

ORDERING CODE **1050 - 1 - 1 - A - C**

BASIC MODEL NUMBER
1050

INPUT VOLTAGE
1 115VAC/115VAC
2 115VAC/12-24VDC (user supplied)

FUNCTION
1 Time base with cycle stop
3 External pulse (time ranges not applicable; omit next to characters)

TIME RANGE (Secs) **ON Time**
OFF Time

A	.022-11	D	.22-110
B	.022-27	E	.22-270
C	.022-55	F	.22-550

NOTE: On and OFF time ranges must have same minimum time

Parts List

115VAC I/O board only	1050RP1
115VAC input/12-24VDC output board	1050RP2
*Time base function board with cycle stop	1050RP3
External pulse function board	1050RP5

* Select ON and OFF time ranges when ordering 1050RP3 (Example: 1050RP3-A-C)

SPECIFICATIONS

INPUT
VOLTAGE: 115VAC
FREQUENCY: 50/60 Hz
TOLERANCE (VOLTAGE): ± 10% of nominal
POWER CONSUMPTION: 1.5 VA maximum
TRANSIENT PROTECTION: Isolation transformer,MOV on input and all outputs.

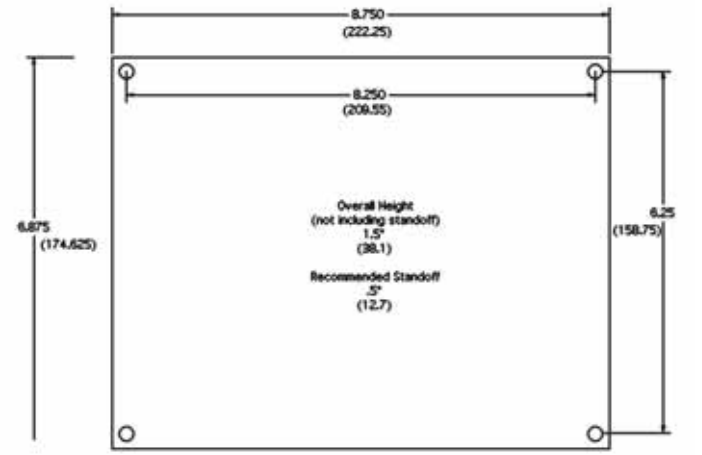
OUTPUT
TYPE: AC-triac DC-transistor
PROTECTION: AC-2A replaceable fuse
RATING: 10A @ 240VAC maximum

AC - 115VAC	**DC - 12-24VDC** (supplied externally)
Inrush 3.5A	Inrush 2.0A
Carry .5A	Carry 1.0A

TIMING
FUNCTION: Stepper with time base or external pulse
TYPE: 1 to 12 selectable step, with cascading capability
REPEAT ACCURACY: ± 1% of setting (time base only)
RESET TIME: Resets to first step when input power removed for 1 second.
TIMING VARIATION VS. VOLTAGE: < .1% (time base only)
INDICATION: 12 LED's indicate output status (ON or OFF); 1 LED indicates current flow through outputs and load.
TIME RANGES: .022 to 550 seconds in six ranges
TOLERANCE: < 30% at maximum, < 0% at minimum
CONTROL: Isolated contact closure or AC proximity sensor
TIMING VARIATION VS. TEMPERATURE: 5% maximum (time base only)

PHYSICAL
OPERATING TEMP: -20° to 70° C (-4° to 158°F)
MOUNTING: Mounting hole in each corner of board; compatiable with standard 8 x 10 inch enclosure mounting studs.
HOUSING: Metal

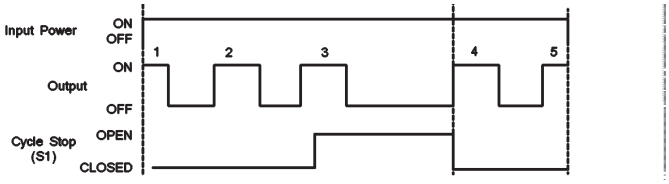
DIMENSIONS inches(millimeters)



FUNCTION DIAGRAMS

#1

Time Base Function Board

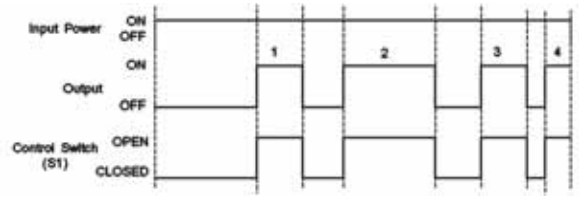


ON/OFF timing function controls output cycle. Two timing potentiometers located on function board control ON and OFF time settings. ON time setting determines length of time each output is energized. OFF time setting determines length of time each output is de-energized.

- Closing the cycle stop switch interrupts the output cycle.
- Closing the cycle stop switch while out cycle is de-energized immediately disables out cycle. When the cycle stop switch is opened, any remaining OFF time is deleted and next output energizes immediately.
- Closing the cycle stop switch while output cycle is energized allows ON time for that output to complete, then output cycle is disabled. Opening cycle stop immediately energizes next output.
- Removing and reapplying input power resets the stepper to the first step of the output cycle.

#3

External Pulse Function Board

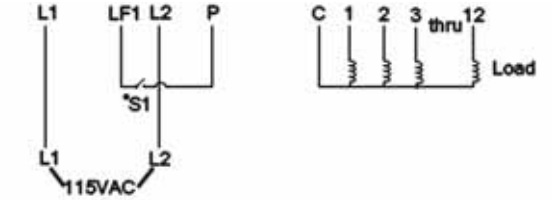


External control switch regulates output cycle.

- Closing control switch energizes output.
- Opening control switch de-energizes output.

WIRING

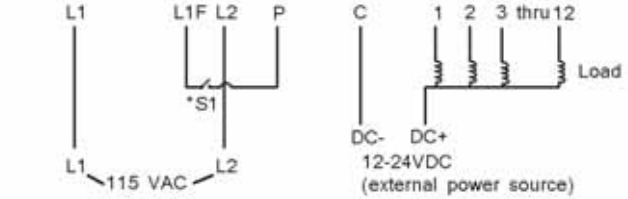
INPUT & OUTPUT WIRING FOR STEPPER WITH AC OUTPUT (REVISION LEVEL D OR HIGHER)



Stepper is wired to supply 120VAC to the output. No additional wiring is necessary.

*S1 operates cycle stop

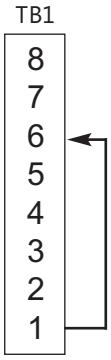
INPUT & OUTPUT WIRING FOR STEPPER WITH DC OUTPUT



2-24VDC must be supplied from external source to C and load.

*S1 provides external control signal

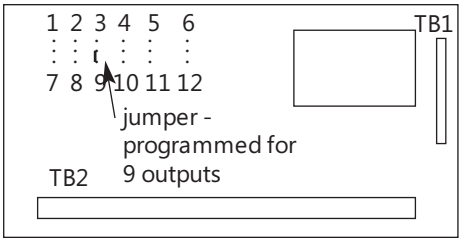
SINGLE BOARD CYCLING



Continuous Cycling

- Connect terminals one (1) and six (6) on terminal block one (TB1) to program the stepper for continuous cycling.
- Omit connection if output cycle is to stop after completing one cycle. Input power must then be removed and reapplied to initiate another output cycle.

Programming for Number of Outputs

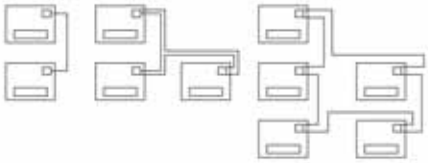


- Output cycle can be limited to fewer than twelve outputs if stepper is programmed for continuous cycling. Install a jumper between socket of desired number of outputs and middle socket as shown in diagram.

CASCADED BOARD CYCLING

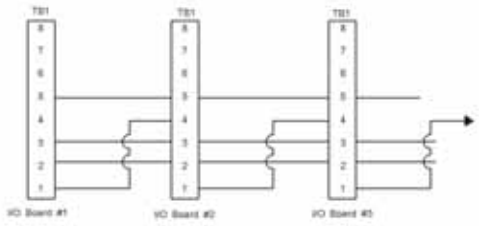
Wiring Configuration

- Arrange boards as shown to minimize the length of the wire runs. It is recommended that input, output and control wiring (TB2) be routed away from logic wiring (TB1) to avoid possibility of noise in the output function.



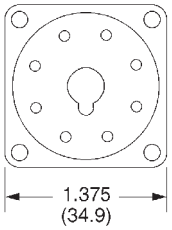
- Only the first I/O board in a cascaded system requires a function board. Program each I/O board in the cascaded system for 12 outputs except the last board, which may be programmed for any number of outputs.

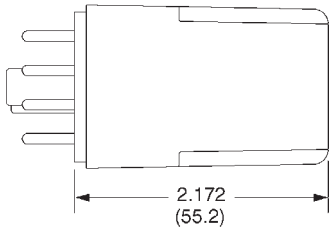
Logic Wiring



- Return wire from last board in the cascaded system to terminal one (1) of #1 board for continuous cycling.
- Terminate wiring at the last board to stop cascaded cycle after on cycle. Input power must then be removed and reapplied

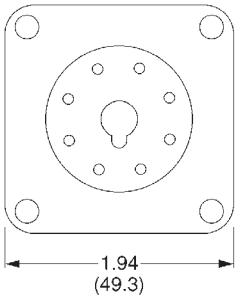
OUTPUT DEVICES

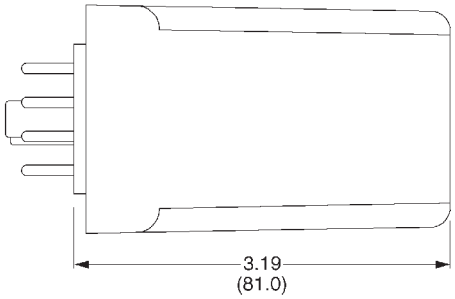




RP-101

RP-101 24 VDC, DPDT Relay, 8-Pin, Plug-in

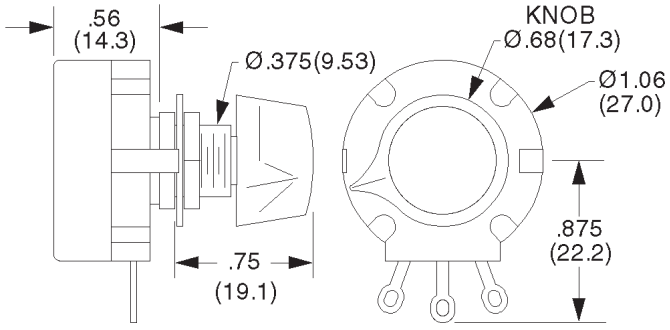




RP-103, RP-104, RP-105 and RP-106

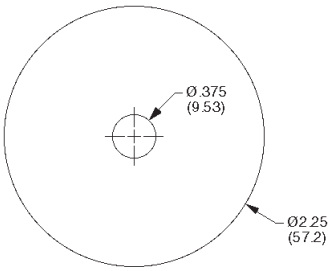
RP-103 1.0A N.O. Solid State, 8-Pin, Plug-in
RP-104 1.5A N.O. Solid State, 8-Pin, Plug-in
RP-105 1.5A N.C. Solid State, 8-Pin, Plug-in
RP-106 1.5A 1 N.O., 1 N.C. Solid State, 8-Pin, Plug-in

POTENTIOMETERS AND RELATED HARDWARE



RP-201 to RP-210

RP-201	10kΩ
RP-202	25kΩ
RP-203	50kΩ
RP-204	100kΩ
RP-205	250kΩ
RP-206	500kΩ
RP-207	1.0MΩ
RP-208	2.5MΩ
RP-209	5.0MΩ
RP-210	10MΩ

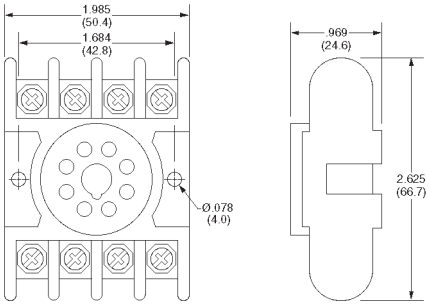


RP-216 Reference dial for remote pots

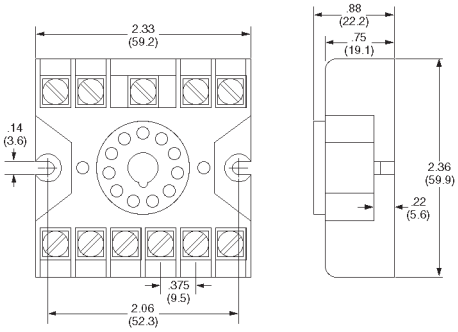
RP-217 Locking attachment for RP-201 to RP-210

SOCKETS

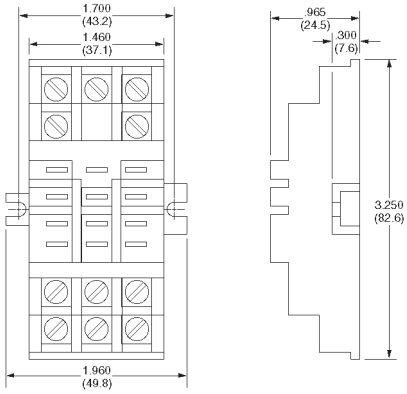
RP-302 8 pin socket, panel mount only



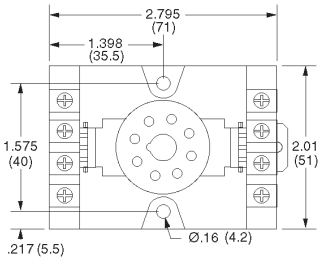
RP-303 11 pin socket,
panel mount only



RP-304 11 pin flat terminal socket,
panel mount only

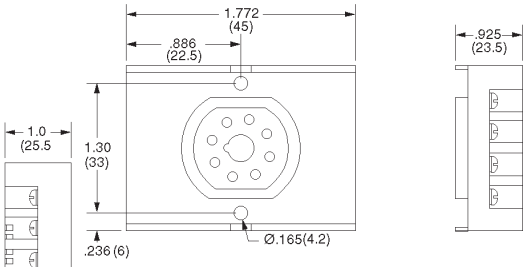


RP-320 8 pin socket,
DIN rail or panel mount,
with hold-down clips

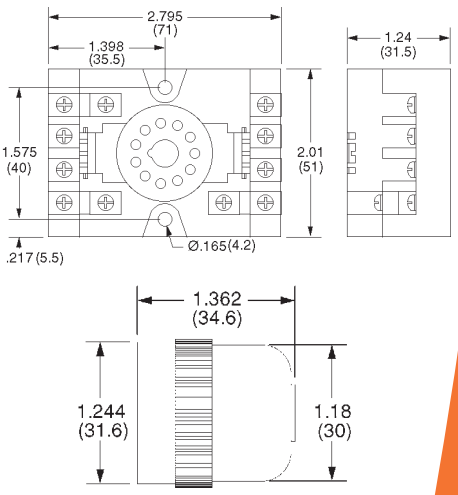


RP-321 8 pin reversed socket, permits wiring
from rear of unit when panel mounting

RP-322 11 pin socket,
DIN rail or panel mount,
with hold-down clips



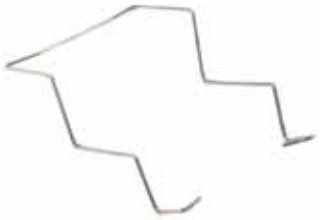
RP-324 11 pin cable socket



RP-323 8 pin cable socket
(not shown)

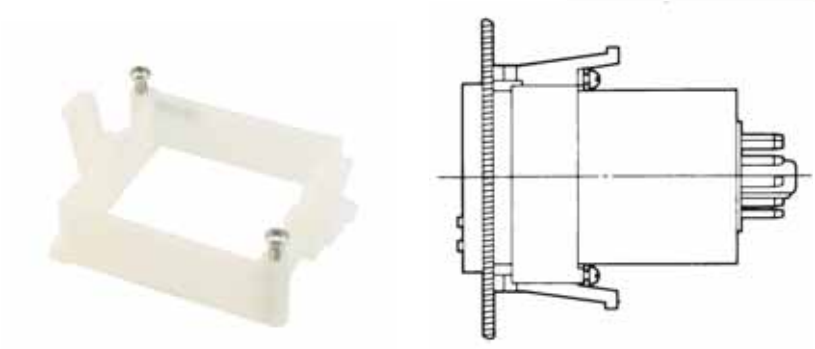
MISCELLANEOUS HARDWARE

RP-306 Hold down clip



RP-305 Hold down clip

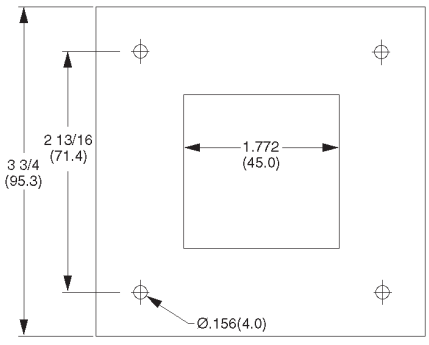
RP-311 Timing indication light



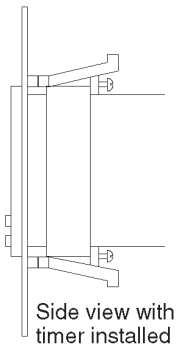
RP-325 Panel mounting clamp for DIN timers

RP-326 Protective cover, Clear, 1094, 1095, 1096 or 1105C only

RP-327 Stop/locking rings, fits over dial on DIN timers. For units with numbers that end in -1 or -2 only.



Material : 16 ga steel, gray primer

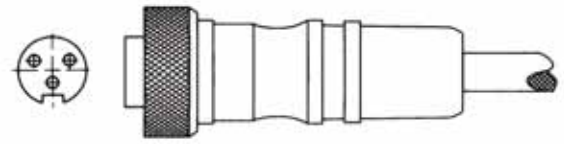


Side view with timer installed

RP-330 Adapter plate permits replacement of ATC 305, 310, 325 & 335 and Eagle Signal CA, CE, CD, CT, CX, HG, HQ, HP & HZ products with the ISSC Model 1068, 1073, 1081, 1090, 1094, 1095, 1096, & 1105C.

No modification of the existing panel cut-out is required. Simply remove the existing timer or counter and install the ISSC RP-330 in its place using 6-32 hardware. The appropriate ISSC timer or counter may now be installed into the "new" panel opening by utilizing an ISSC model RP-325 panel mount clamp.(one RP-325 is included with digital models but must be ordered separately for analog models)

RP-503 2m cable with connector for 1248A or 1250
RP-503-5 same as above 5m long



Modor TECHNICAL PRODUCTS

Modor Technical Products

a division of Kanson Electronics Inc.

In addition to our timers and sensors we offer **other services** to the industries we serve:

Modor Technical Products offers a full line of plastic injection molded enclosures, header assemblies, and other products that you may find useful in your design needs.

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Bulletin 1000 1/12 Supersedes 7/11
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Made in the USA

Here at **ISSC/Kanson Electronics Inc.** this still means something to all of us:

We manufacture our timers and sensors in middle Tennessee. We drill the metal, we inject the plastic, we powder coat the steel, and we design/build the printed circuit boards; then we assemble them right here in the USA.

We build our products as if we were the customer. ***Powder coated steel enclosures, Zinc plated base plates, Stainless Steel screws*** are just a few of the items that make our products outlast and outperform the competition. We do not cut corners or make excuses; our products will outperform any on the market today and we stand behind that pledge.

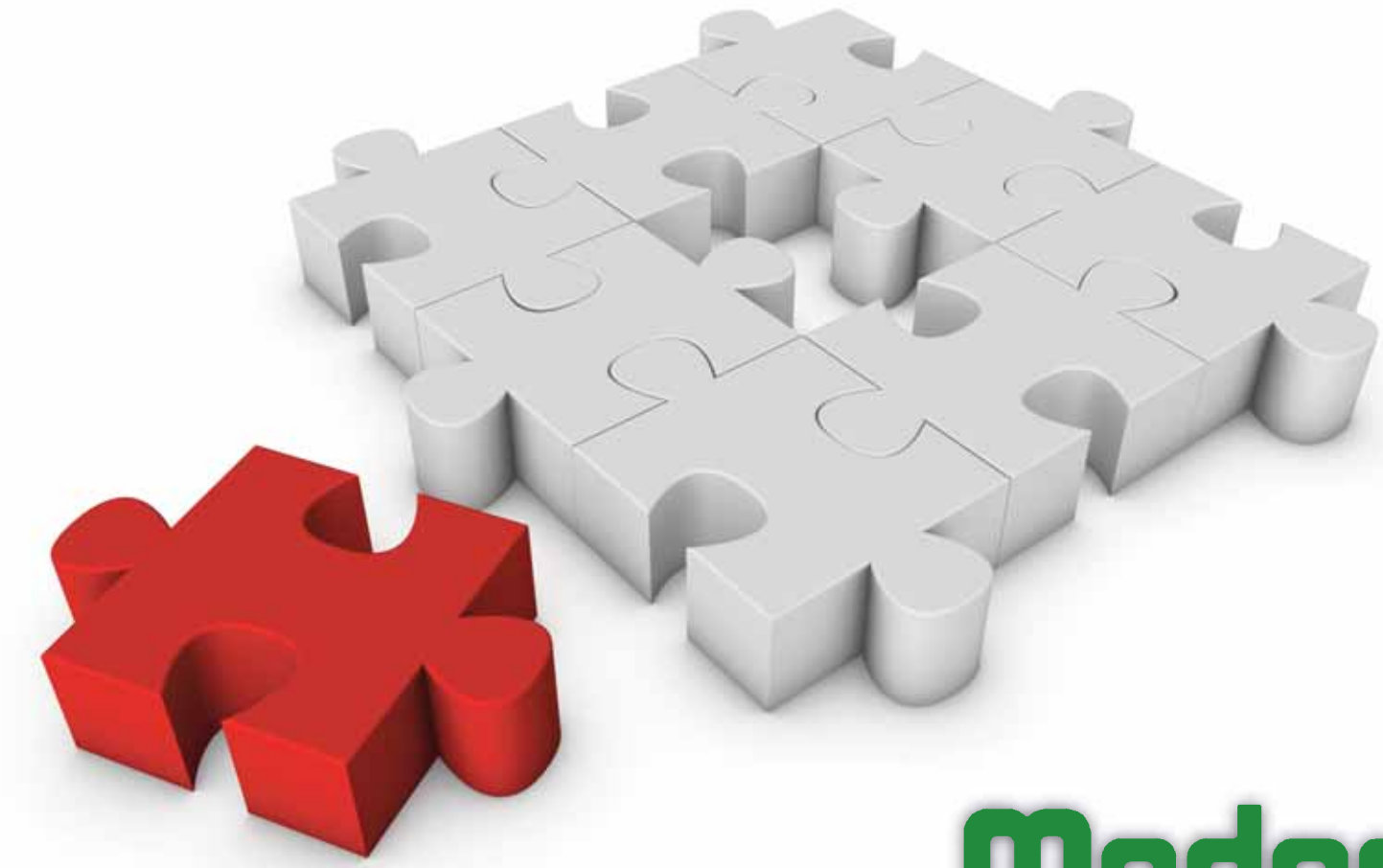
Beyond using the best materials available we go the extra mile by ***testing, cycling, and QC'ing 100% of everything we manufacture***. We know our products work before you ever receive them; making your life easier is why we do it.

If you're in the market for timers or sensors, you might as well **buy the best**. Our quality and attention to detail in the manufacturing process will help make your end product outlast and outperform your competition. This is one of the reasons we believe that ***"Timing is Everything"***.

Your success is our business.

If you didn't find what you were looking for in this catalog, give us a call. We build many specialized timers and sensors, and can customize most of the products in this catalog to fit your needs.

Isn't it nice when things just fit together?



Modor
TECHNICAL PRODUCTS

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Welcome to Modor Technical Products

Contents

CA line

Our **CA Line** of enclosures...

Made from Lexan 141R polycarbonate (PC)
(see page 22)
Extremely durable.
Very high impact resistance.

Housing Material: Polycarbonate
Flammability: V0-V2
Melting temperature (Tm) 267 °C
Surface resistivity: 10^{15} Ω/sq
Volume resistivity (ρ): 10^{12}–10^{14} Ω·m

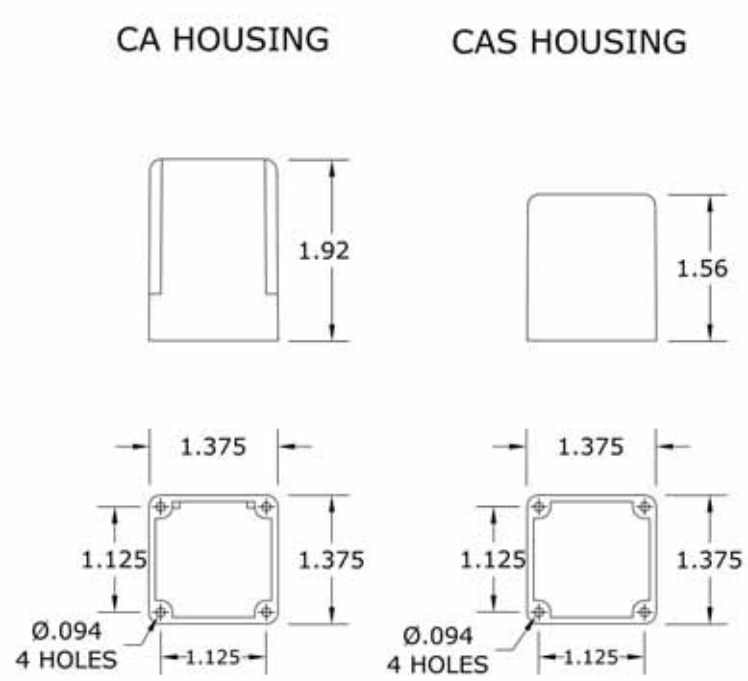
CA Specifications:

Width (mm)	Length (mm)	Height (mm)
35.0	*35.0*	*48.7*
Width (in)	**Length (in)**	**Height (in)**
1.375	*1.375*	*1.920*

CAS Specifications:

Width (mm)	Length (mm)	Height (mm)
35.0	*35.0*	*39.6*
Width (in)	**Length (in)**	**Height (in)**
1.375	*1.375*	*1.56*

Customized Machining Available
Customized Printing Available



Ordering:
CA (followed by color)
CAS (followed by color)

example:	CA red	CAS red
	CA blue	CAS blue
	CA clear	CAS clear
	CA green	CAS green
	CA yellow	CAS yellow
	CA orange	CAS orange
	CA beige	CAS beige
	CA black	CAS black
	CA white	CAS white

(custom colors available)

CA Line Header Assemblies

Our **CA Line** of header assemblies include:
CA-8, CA-8DTL, CA-8DTS, CA-8P, CA-9,
CA-11, CA-11DTL, CA-11DTS, CA-20
CAMF-8, CAMF-11
Material "Phenolic"(see page 23)
Extremely Hard
Good Thermal Stability
Chemical Imperviousness

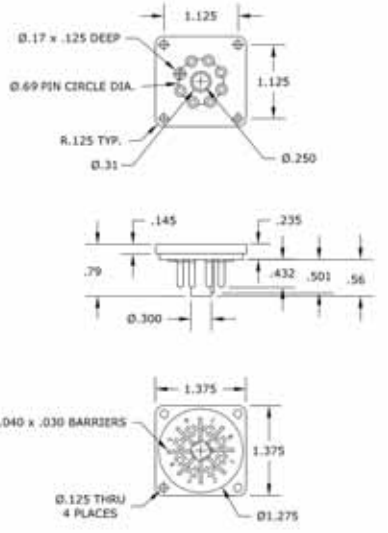
8,9,11,20 PIN Bases

"Octal style" headers
In-Line style headers
Blade Type headers

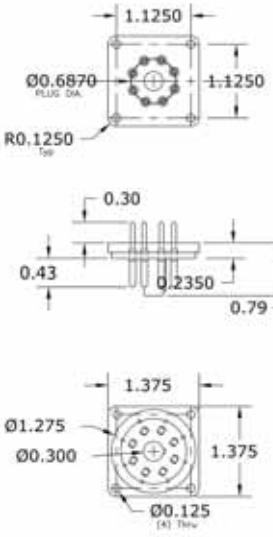
Double thru pin connectors
Metal flanged headers also available
Machining and printing available

Ordering:
Use part number listed above

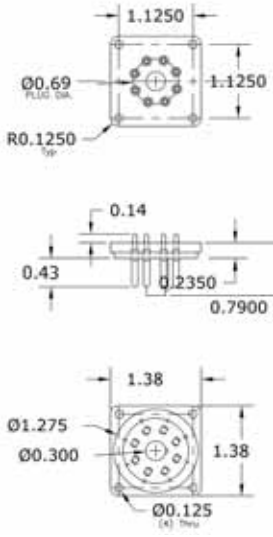
CA-8



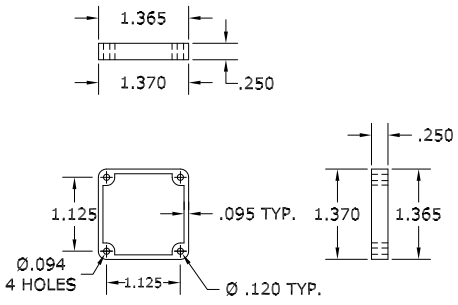
CA-8DTL



CA-8DTS



CA-Spacer



5

CA Line Header Assemblies *(con't)*

Our **CA Line** of header assemblies include:
CA-8, CA-8DTL, CA-8DTS, CA-8P, CA-9,
CA-11, CA-11DTL, CA-11DTS, CA-20
CAMF-8, CAMF-11

Header Material: Phenolic (PF), (see page 23)

Extremely Hard
Good Thermal Stability
Chemical Imperviousness

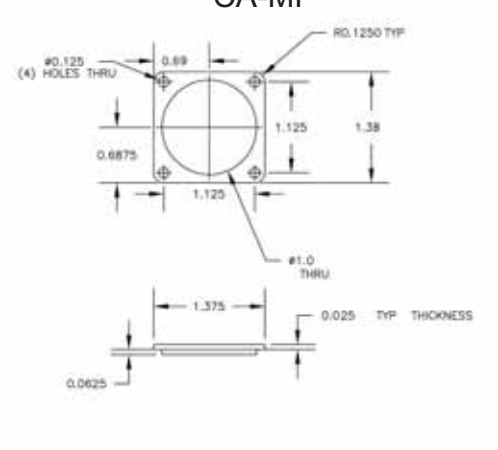
8,9,11,20 PIN Bases

"Octal style" headers
In-Line style headers
Blade Type headers

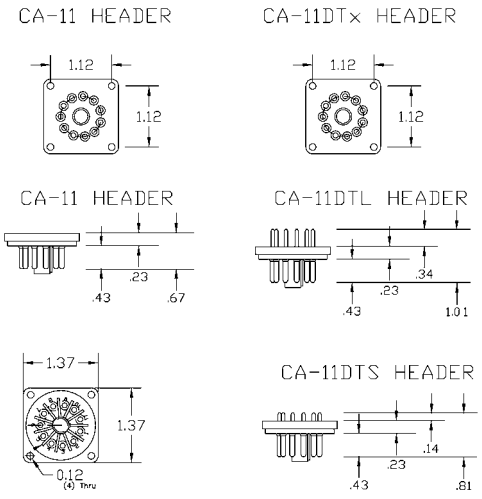
Double thru pin connectors
Metal flanged headers also available
Machining and printing available

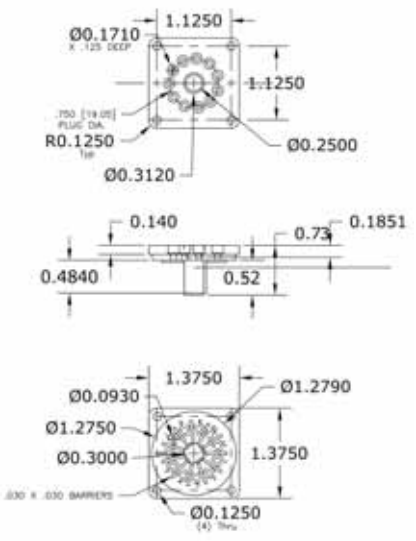
Ordering:
Use part number listed above

CA-MF



CA-11





CB Line

Our **CB Line** of enclosures...

Made from Lexan 141R polycarbonate (PC)
(see page 22)
Extremely durable.
Very high impact resistance.

Housing Material: Polycarbonate
Flammability: V0-V2
Melting temperature (Tm) 267 °C
Surface resistivity: 10^{15} Ω/sq
Volume resistivity (ρ): 10^{12}–10^{14} Ω·m

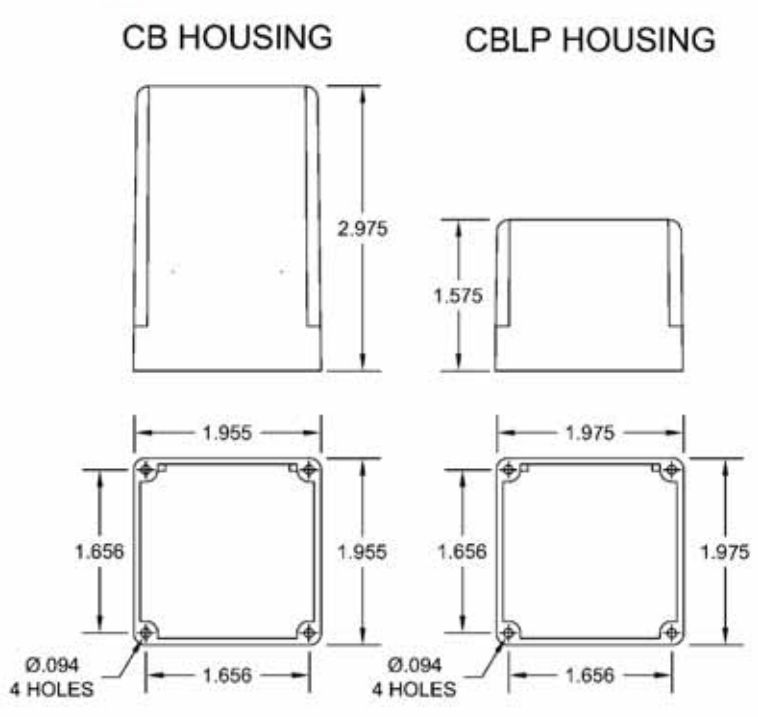
CB Specifications:

Width (mm)	Length (mm)	Height (mm)
49.8	*49.8*	*75.7*
Width (in)	**Length (in)**	**Height (in)**
1.955	*1.955*	*2.975*

CBLP Specifications:

Width (mm)	Length (mm)	Height (mm)
47.0	*47.0*	*40.1*
Width (in)	**Length (in)**	**Height (in)**
1.975	*1.975*	*1.575*

Customized Machining Available
Customized Printing Available



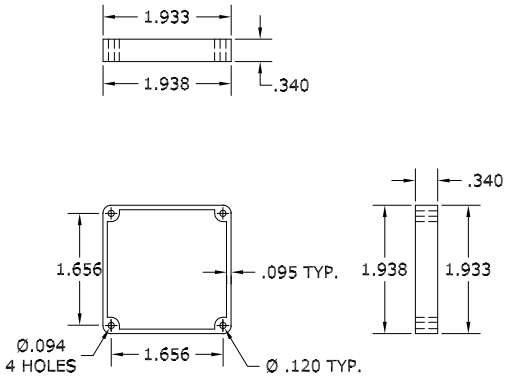
Ordering:

CB (followed by color)
CBLP (followed by color)

example:	CB red	CBLP red
	CB blue	CBLP blue
	CB clear	CBLP clear
	CB green	CBLP green
	CB yellow	CBLP yellow
	CB orange	CBLP orange
	CB beige	CBLP beige
	CB black	CBLP black
	CB white	CBLP white

(custom colors available)

CB-Spacer



CB Line Header Assemblies

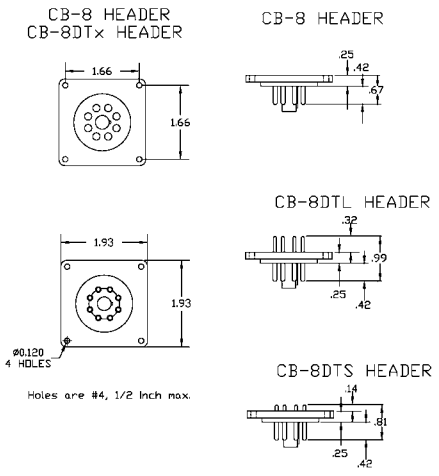
Our **CB Line** of header assemblies include:
CB-8, CB-8DTL, CB-8DTS, CBMF-8, CB-11, CB-11DTL, CB-11DTS, CBMF-11, CB-12, CB-20

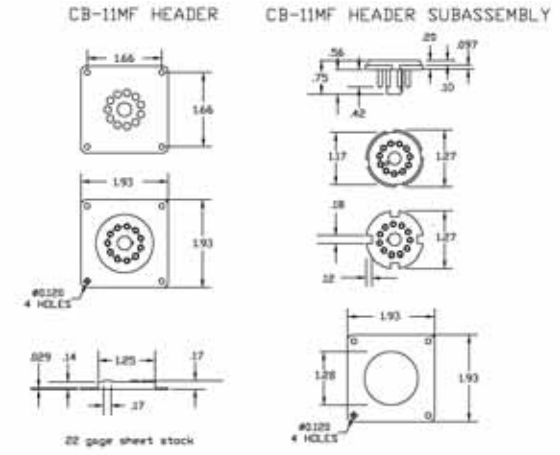
Header Material: Phenolic (PF), (see page 23)
Extremely Hard
Good Thermal Stability
Chemical Imperviousness

8,11,12,20 PIN Bases

"Octal style" headers
In-Line style headers
Blade Type headers

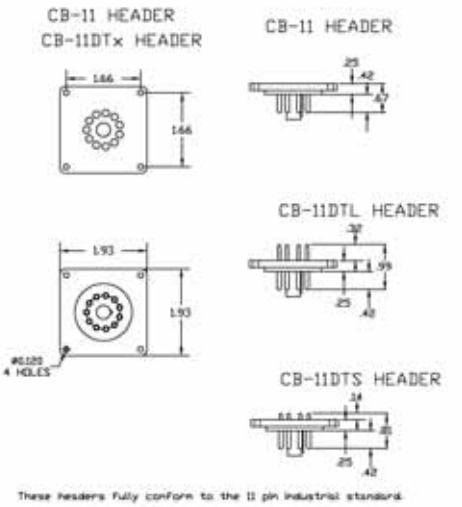
Double thru pin connectors
Metal flanged headers also available
Machining and printing available

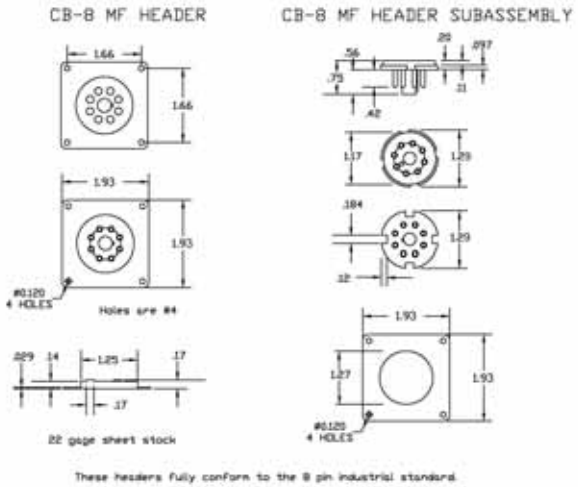


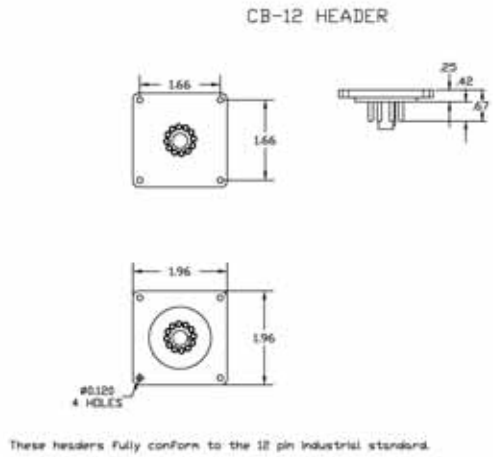


Ordering:

CB-(followed by pin count)
CB-(followed by pin count) DTS
CB-(followed by pin count) DTL
CBMF-8
CBMF-11







CC Line

Our **CC Line** of enclosures include:
CC, CCPC, CCL, CCLPC

Made from Lexan 141R polycarbonate (PC)
(see page 22)
Extremely durable.
Very high impact resistance.

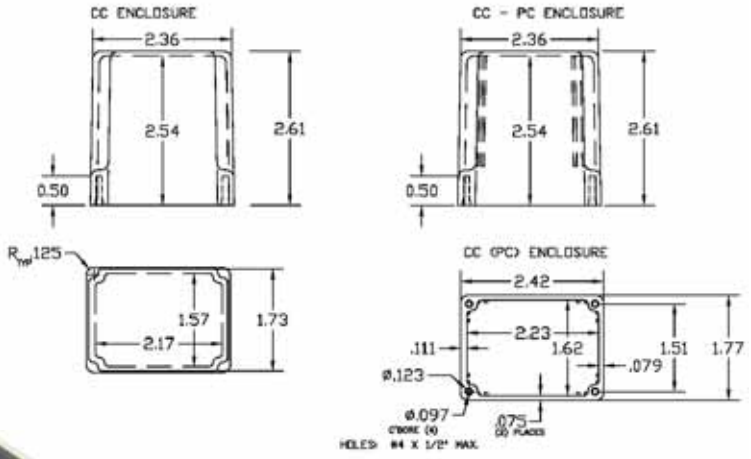
Housing Material: Polycarbonate
Flammability: V0-V2
Melting temperature (Tm) 267 °C
Surface resistivity: 10^{15} Ω/sq
Volume resistivity (ρ): 10^{12}–10^{14} Ω·m

CC/CCPC Specifications:

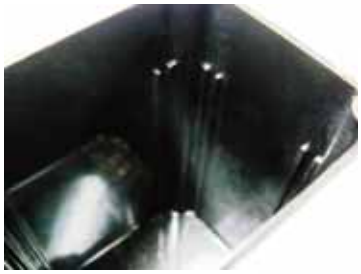
Width (mm)	Length (mm)	Height (mm)
44.9	*62.5*	*66.3*
Width (in)	**Length (in)**	**Height (in)**
1.73	*2.36*	*2.61*

CCL/CCLPC Specifications:

Width (mm)	Length (mm)	Height (mm)
44.9	*62.5*	*83.0*
Width (in)	**Length (in)**	**Height (in)**
1.75	*2.32*	*3.27*



Customized Machining Available
Customized Printing Available

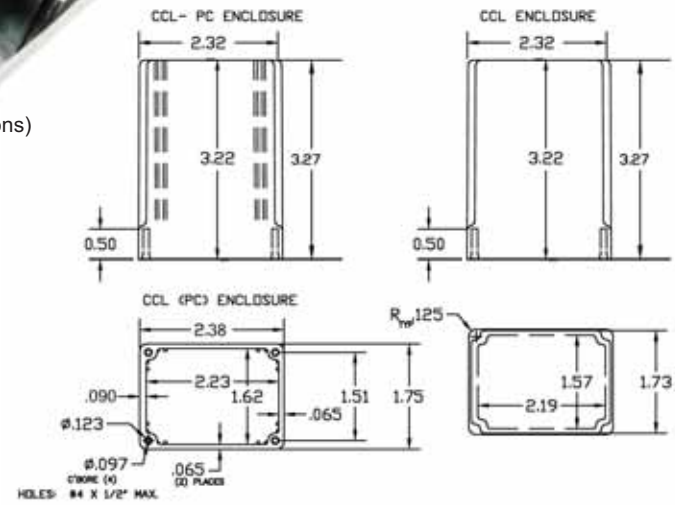

(Close-up of PC versions)

Ordering:

CC (followed by color)
CCPC (followed by color)
CCL (followed by color)
CCLPC (followed by color)

example: CC red	CCPC red	CCL red
CC blue	CCPC blue	CCL blue
CC clear	CCPC clear	CCL clear
CC green	CCPC green	CCL green
CC yellow	CCPC yellow	CCL yellow
CC orange	CCPC orange	CCL orange
CC beige	CCPC beige	CCL beige
CC black	CCPC black	CCL black
CC white	CCPC white	CCL white

(custom colors available)



CC Line Header Assemblies

Our **CC Line** of header assemblies include:
CC-8, CC-8DTL, CC-8DTS, CC-8MF, CC-9, CC-11, CC-11DTL, CC-11DTS, CC-11MF, CCD-12, CCD-12 w/clip, CCD-12 DTL, CCD-12 DTL w/clip, CCD-12DTS, CCD-12 DTS w/clip,CC-20, CCQ-8, CCQ-11

Header Material: Phenolic (PF), (see page 23)
Extremely Hard
Good Thermal Stability
Chemical Imperviousness

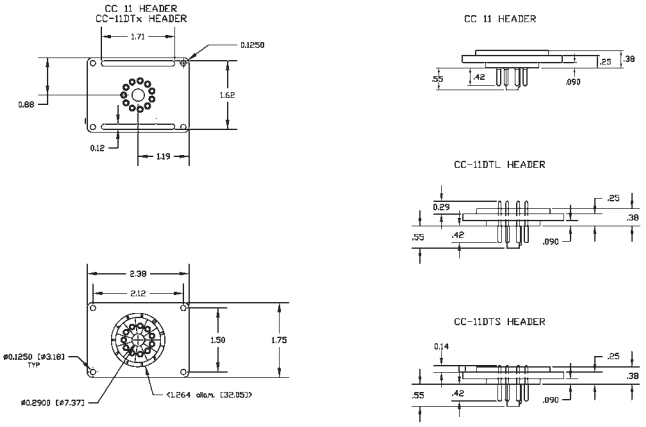
8,9,11,12,20 PIN Bases

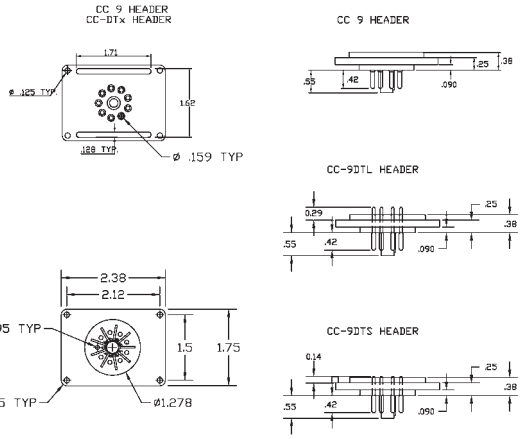
"Octal style" headers
In-Line style headers
Blade Type headers

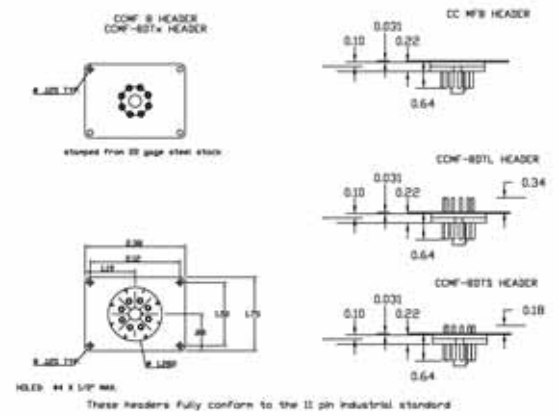
Double thru pin connectors
Metal flanged headers also available
Machining and printing available

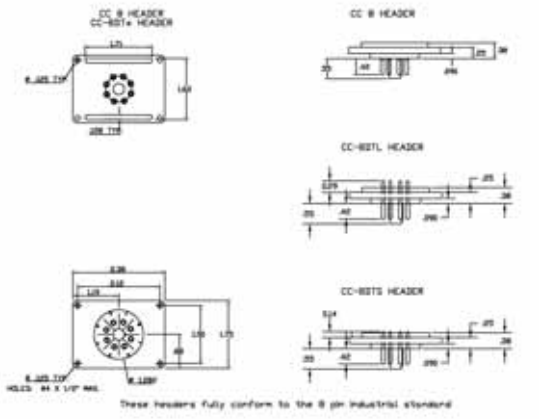
Ordering:

Use part number listed above

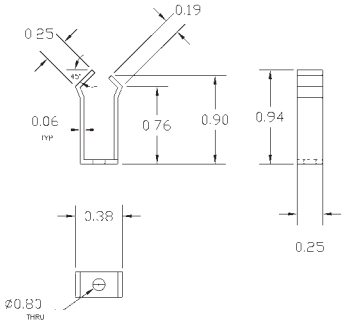








(Clip also sold separately)



CC Line Header Assemblies *(con't)*

Our **CC Line** of header assemblies include:
CC-8, CC-8DTL, CC-8DTS, CC-8MF, CC-9, CC-11, CC-11DTL, CC-11DTS, CC-11MF, CCD-12, CCD-12 w/clip, CCD-12 DTL, CCD-12 DTL w/clip, CCD-12DTS, CCD-12 DTS w/clip,CC-20, CCQ-8, CCQ-11
Header Material: Phenolic (PF), (see page 23)
Extremely Hard
Good Thermal Stability
Chemical Imperviousness

CC-Clip is made of
Lexan 141R
polycarbonate (PC)

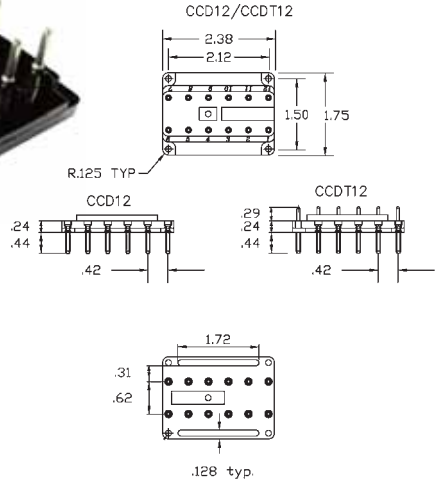
8,9,11,12,20 PIN Bases

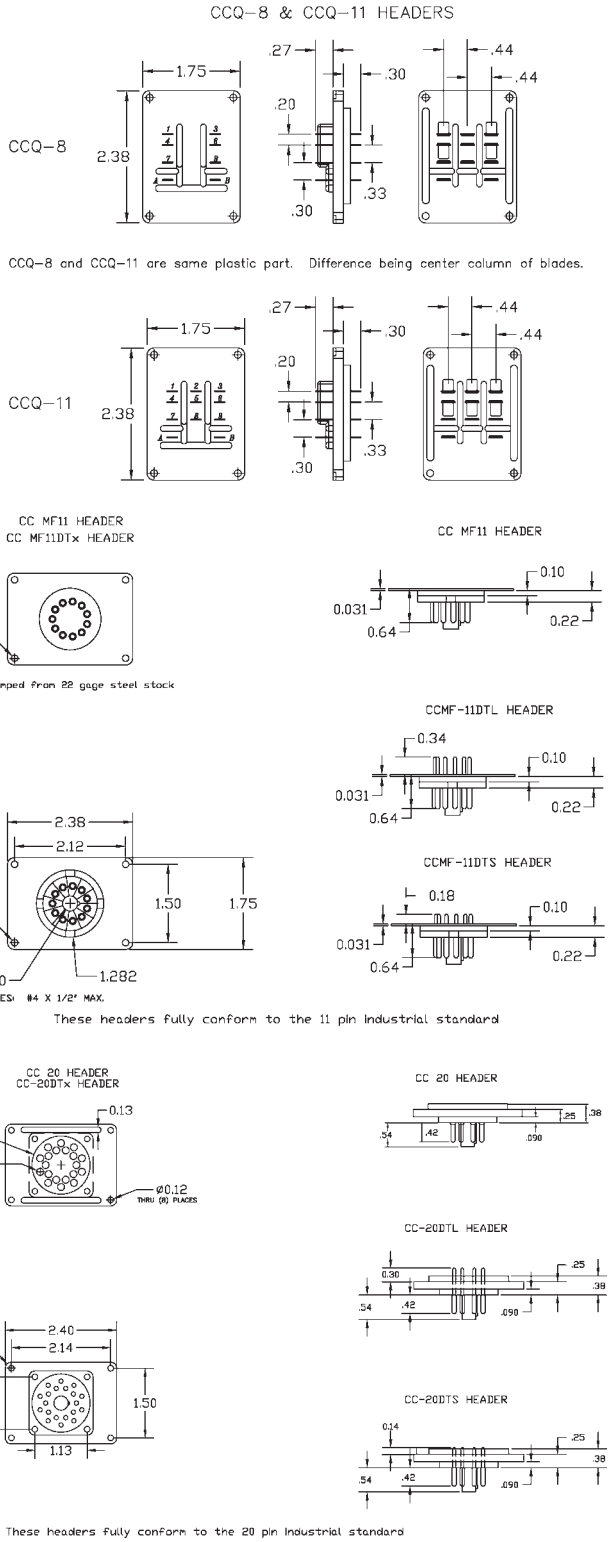
"Octal style" headers
In-Line style headers
Blade Type headers

Double thru pin connectors
Metal flanged headers also available
Machining and printing available

Ordering:

Use part number listed above





CD Header Assemblies

Our **CD Line** of header assemblies include:
CD-8, CD-8DTL, CD-8DTS, CD-11, CD-11DTL, CD-11DTS

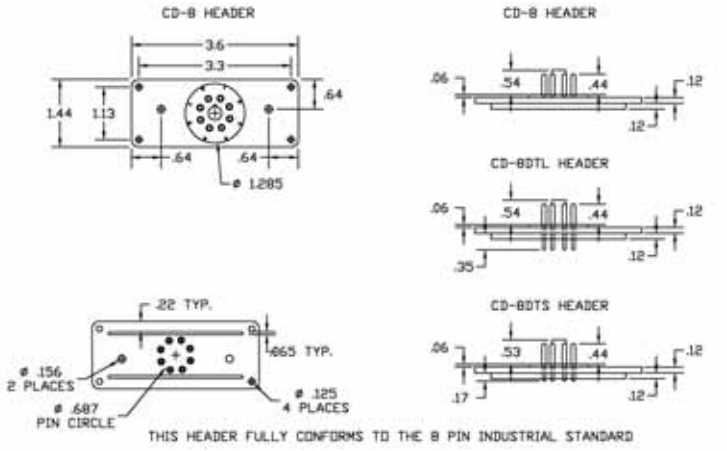
Header Material: Phenolic (PF), (see page 23)

Extremely Hard
Good Thermal Stability
Chemical Imperviousness

8,9,11,12,20 PIN Bases

"Octal style" headers
In-Line style headers
Blade Type headers

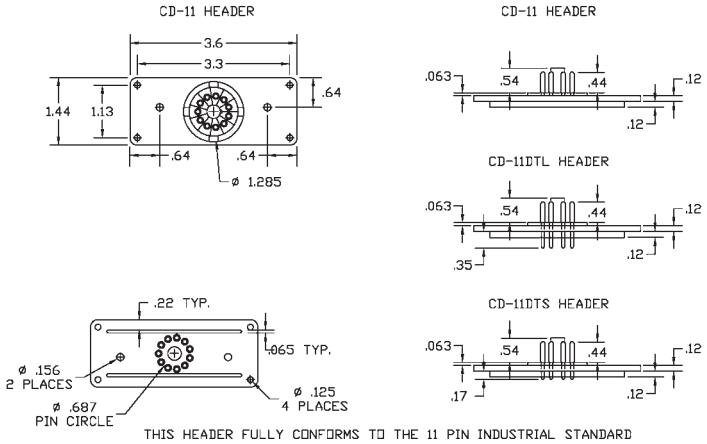
Double thru pin connectors
Metal flanged headers also available
Machining and printing available



Ordering:

CD-(followed by pin count)
CD-(followed by pin count) DTS
CD-(followed by pin count) DTL

(also see the JT line of headers)



CF Line

Our **CF Line** of enclosures:

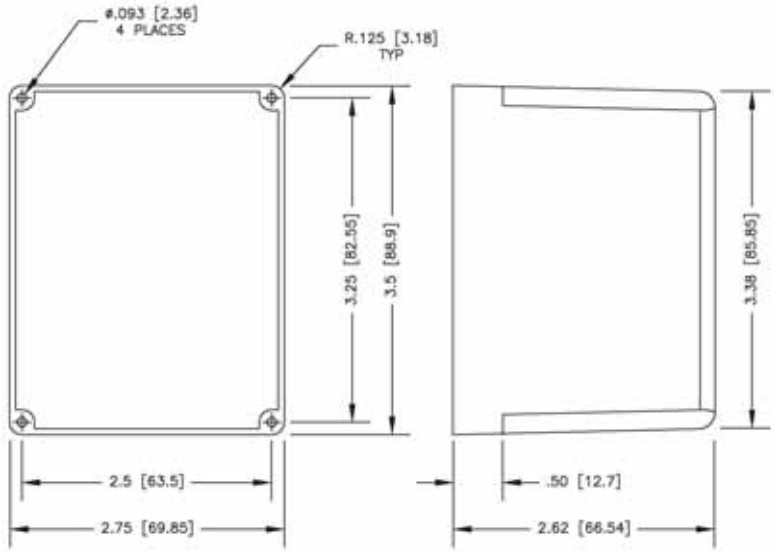
Made from Lexan 141R polycarbonate (PC)
(see page 22)
Extremely durable.
Very high impact resistance.

Housing Material: Polycarbonate
Flammability: V0-V2
Melting temperature (Tm) 267 °C
Surface resistivity: 10^{15} Ω/sq
Volume resistivity (ρ): 10^{12}–10^{14} Ω·m

CF Specifications:

Width (mm)	Length (mm)	Height (mm)
69.8	*88.9*	*66.5*
Width (in)	**Length (in)**	**Height (in)**
2.75	*3.5*	*2.62*

Customized Machining Available
Customized Printing Available



Ordering:
CF (followed by color)

example: CF red
CF blue
CF clear
CF green
CF yellow
CF orange
CF beige
CF black
CF white
(custom colors available)

CH Line

Our **CH Line** of enclosures:

Made from Lexan 141R polycarbonate (PC)
(see page 22)
Extremely durable.
Very high impact resistance.

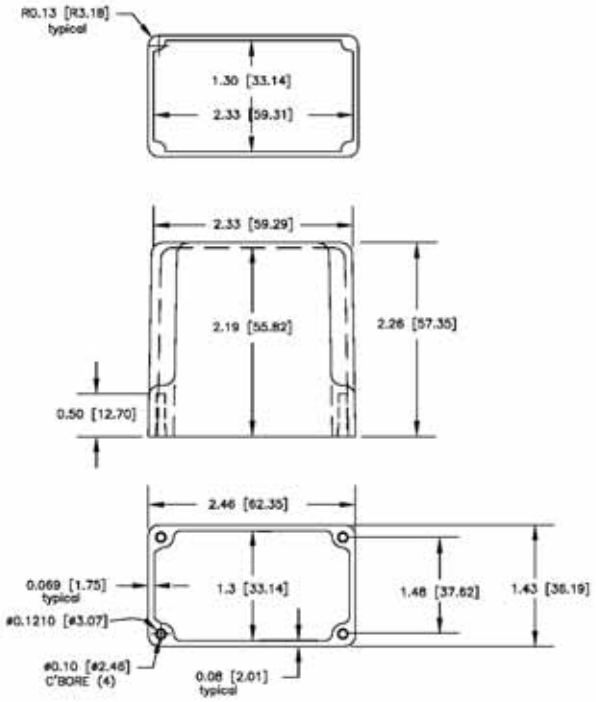
Housing Material: Polycarbonate
Flammability: V0-V2
Melting temperature (Tm) 267 °C
Surface resistivity: 10^{15} Ω/sq
Volume resistivity (ρ): 10^{12}–10^{14} Ω·m

Header Material: Phenolic (PF), (see page 23)

CH Specifications:

Width (mm)	Length (mm)	Height (mm)
36.3	*62.5*	*57.4*
Width (in)	**Length (in)**	**Height (in)**
1.43	*2.46*	*2.26*

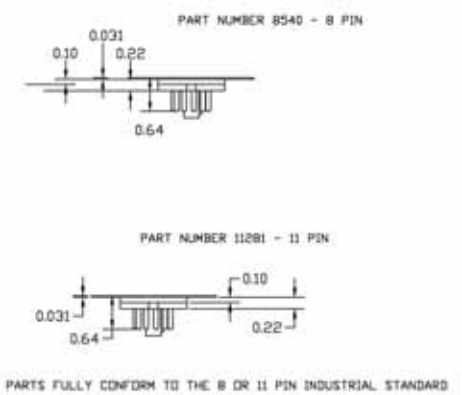
Customized Machining Available
Customized Printing Available



Ordering:

CH (followed by color)

example: CH red
CH blue
CH clear
CH green
CH yellow
CH orange
CH beige
CH black
CH white
(custom colors available)



JP Line

Our **JP Line** of header assemblies include:
JP-90, JP-11, JP-11DTL, JP-11DTS

Housing Material: Lexan 141R polycarbonate (PC) *(see page 22)*

Header Material: Phenolic (PF), (see page 23)

Header Material is:
Extremely Hard
Good Thermal Stability
Chemical Imperviousness

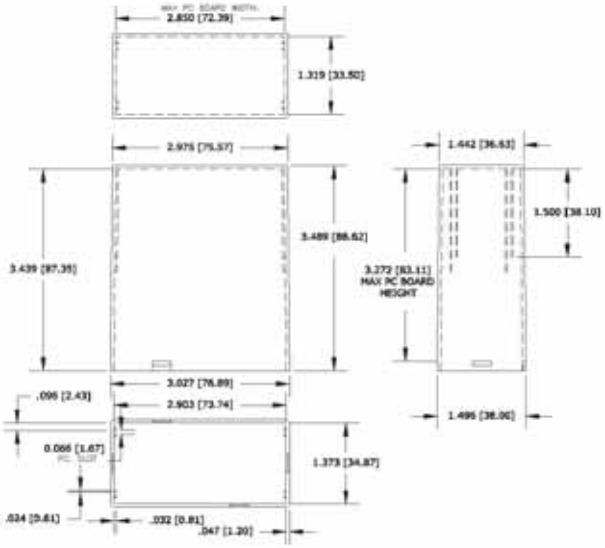
11 PIN Bases

"Octal style" headers
In-Line style headers

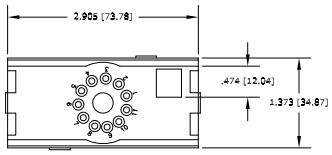
Double thru pin connectors
Machining and printing available

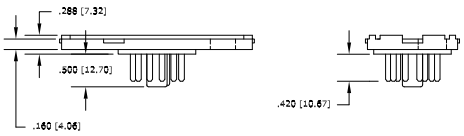
Ordering:
JP- 90
JP- 11
JP- 11DTL
JP-11DTS

JP-90 Housing

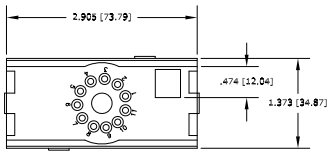


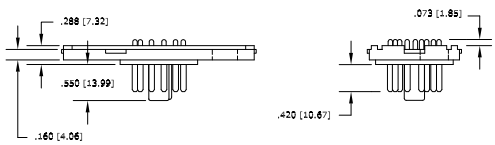
JP-11

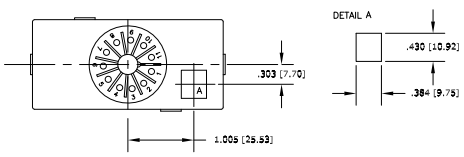




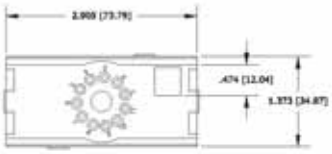
JP-11DTS

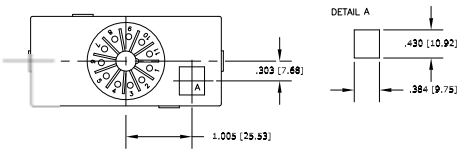


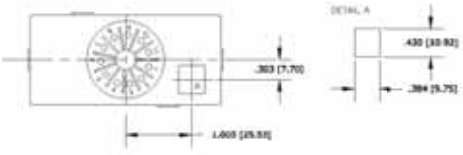




JP-11DTL







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JR Line

Our **JR Line** of header assemblies include:
JR-105PCC, JR-11, JR-11DTL, JR-11DTS

Housing Material: Lexan 141R polycarbonate (PC) *(see page 22)*

Header Material: Phenolic (PF), (see page 23)

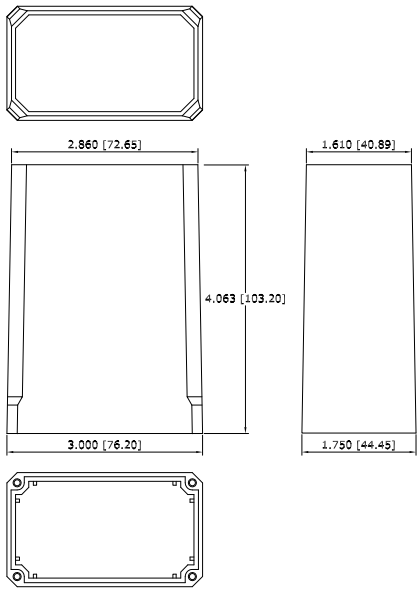
Header Material is:
Extremely Hard
Good Thermal Stability
Chemical Imperviousness

11 Bases

"Octal style" headers
In-Line style headers

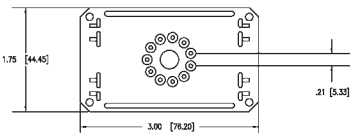
Double thru pin connectors
Metal flanged headers also available
Machining and printing available

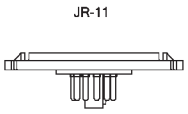
JR-105PCC Housing

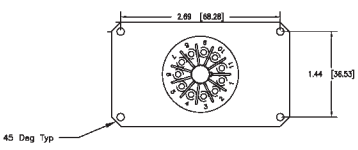


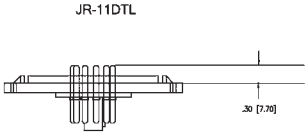
Ordering:
JR-105PCC
JR-11
JR-11DTL
JR-11DTS
JRMF

JR-11

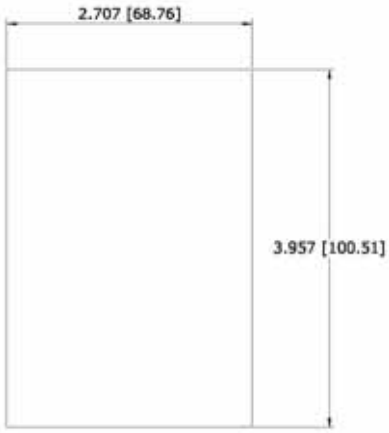








JR (PC board Size)



Potting Shell Line

Our **Potting Shell Line** of enclosures include:
22750-0, 22750-1A, 22750-5, 22750-10, 22526, 22536
22526 and 22536 made with Lexan 141R polycarbonate (PC) *(see page 22)*

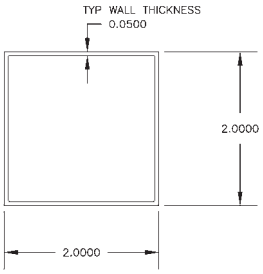
All others Material: Phenolic (PF), (see page 23)

Extremely Hard
Good Thermal Stability
Chemical Imperviousness

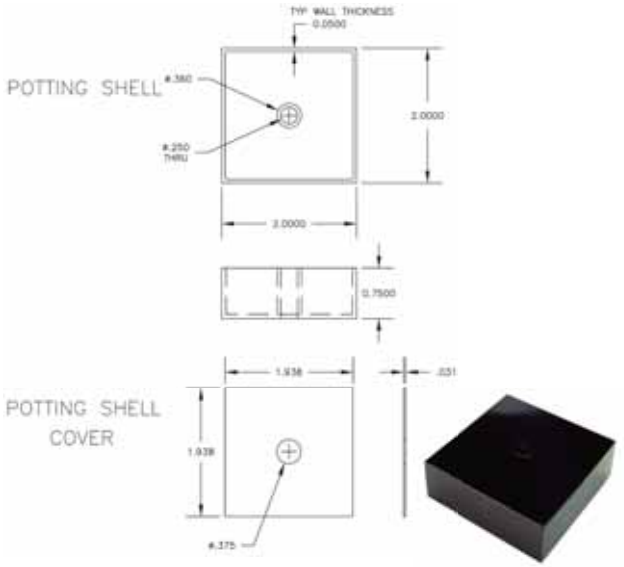
Customized Machining Available
Customized Printing Available

Ordering:
Case: part number (followed by color)
Lid: (use part number)

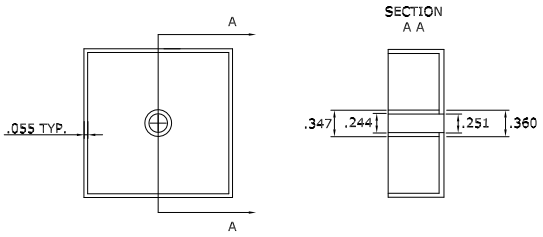
22536



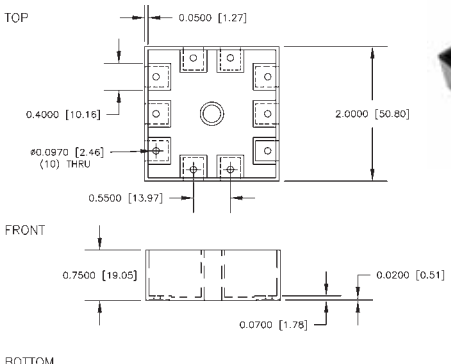
22526



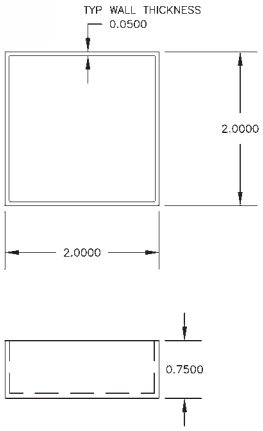
22750-1A



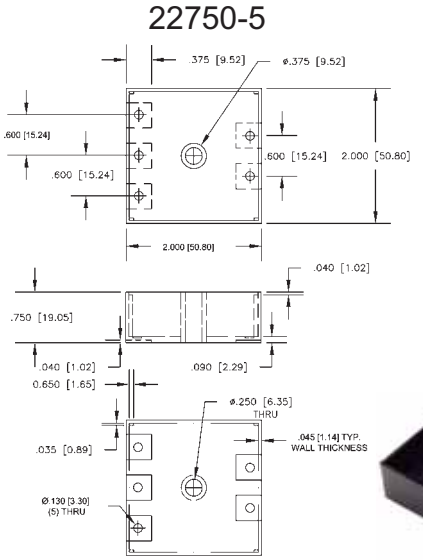
22750-10



22750-0



22750-5



Potting Shell Lids

Our **Potting Shell Line** of lids include:
22537, 22538, 22509, 22600, 22601, 22602, 22603, 22604, 22605, RSOB-Holes, RSOB-Posts

Extremely durable.
Very high impact resistance.

Housing Material: Lexan 141R polycarbonate (PC) *(see page 22)*

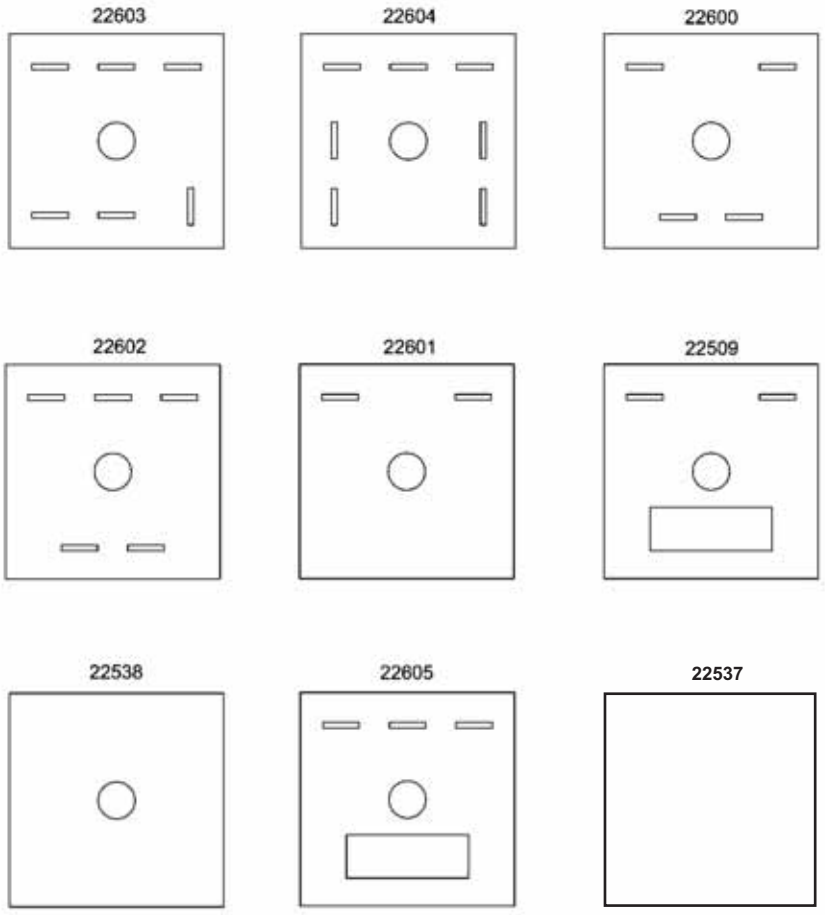
Flammability: V0-V2
Melting temperature (Tm) 267 °C
Surface resistivity: 10^{15} Ω/sq
Volume resistivity (ρ): 10^{12}–10^{14} Ω·m

Customized Machining Available
Customized Printing Available

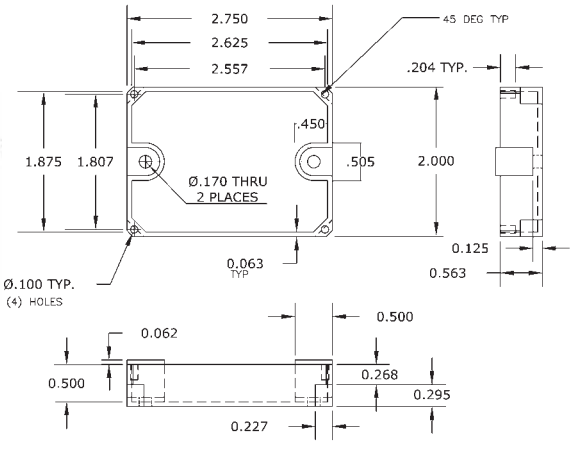
Ordering:
Case: 22750 (followed by color)
Lid: (use part number)

(custom colors available)

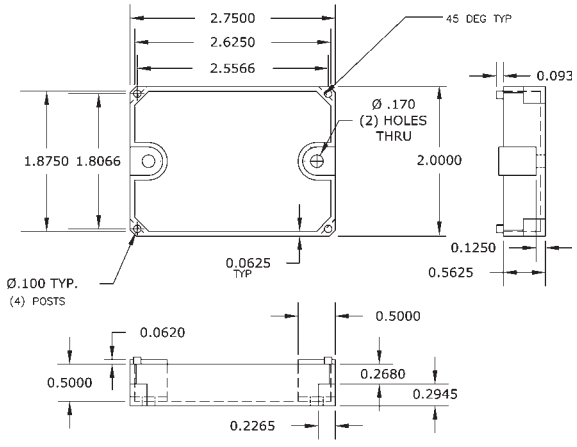
Available Covers (by part number)



RSOB-Holes



RSOB-Posts



Many More Headers Available that are not listed...Call US

1-931-796-0039

RMF-8P

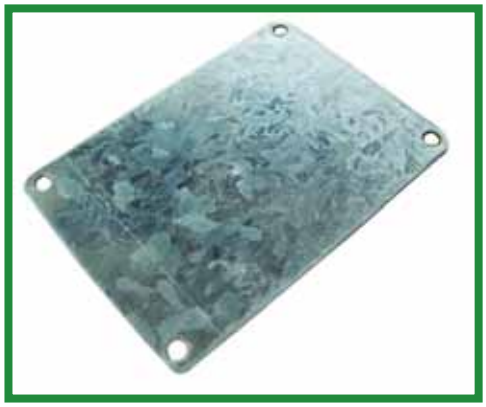
11281-11P

ATC-422-8

R60

AGA-11

ATC-8



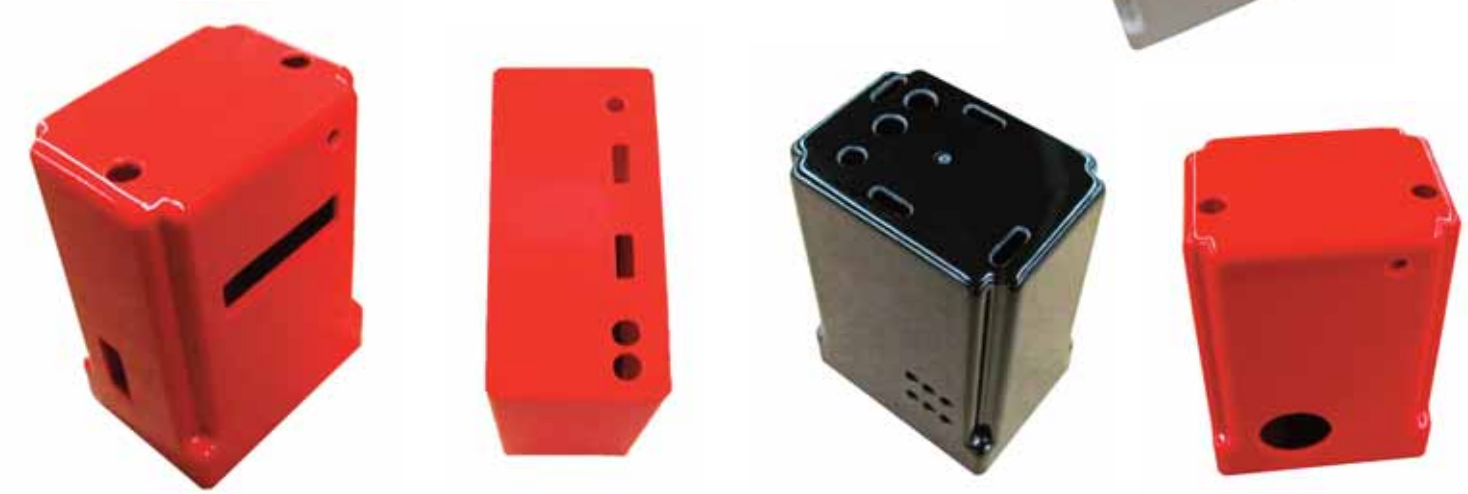
CC Flange (no hole)

ATC-11

Custom CNC Drilling or Milling available

In House CNC Drilling/Milling and Perforation Department will custom drill any type of perforation needed for your final assembly.

Extremely Accurate repeatability.



Let us earn your business, one piece at a time.

We take pride in "Made in the USA"

Custom Silk Screening and Pad Printing Available

In House Pad Printing and Silk Screening Department for all you industrial needs.

Small font and point sizes available.

100% Made in the USA.

Polycarbonate Specifications

LEXAN 141R is a medium viscosity multi purpose grade and contains a release agent to ensure easy processing. LEXAN 141R is available in transparent, translucent and opaque colours.

	Standard	Unit	Value
1. Physical Properties			
Density	ISO 1183	g/cm³	1.20
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	ISO 1133	cm³/10min	12.0
Water Absorption 23C/50RH	ISO 62	%	0.15
Water Absorption Sat/23C	ISO 62	%	0.35
2. Mechanical Properties			
Tensile Modulus (1mm/min)	ISO 527-1, -2	MPa	2350
Tensile Stress at Yield (50mm/min)	ISO 527-1, -2	MPa	63
Tensile Stress at Break (50mm/min)	ISO 527-1, -2	MPa	70
Tensile Strain at Yield (50mm/min)	ISO 527-1, -2	%	6.0
Tensile Strain at Break (50mm/min)	ISO 527-1, -2	%	110
Flexural Modulus (2mm/min)	ISO 178	MPa	2300
Charpy Unnotched Impact Strength (23°C edgewise)	ISO 179	kJ/m²	No Break
Charpy Unnotched Impact Strength (-30°C edgewise)	ISO 179	kJ/m²	No Break
Charpy Notched Impact Strength (23°C, Type 2, Notch C)	ISO 179	kJ/m²	35
Unnotched Izod Impact Strength (23°C, Type 1)	ISO 180	kJ/m²	No Break
Unnotched Izod Impact Strength (-30°C, Type 1)	ISO 180	kJ/m²	No Break
Notched Izod Impact Strength (23°C, Type 1, Notch A)	ISO 180	kJ/m²	12
Notched Izod Impact Strength (-30°C, Type 1, Notch A)	ISO 180	kJ/m²	10
Ball Indentation Hardness (H 358/30)	ISO 2039-1	MPa	95
3. Thermal Properties			
Coefficient of Linear Thermal Expansion, Flow (23 to 80°C)	ISO 11359-1,-2	cm/cm/°C	7.0E-005
HDT B (0.45 MPa) Unannealed	ISO 75B-1,-2	°C	136
HDT A (1.80 MPa) Unannealed	ISO 75A-1,-2	°C	125
Vicat Softening Temperature A50 (50°C/h, 10N)	ISO 306	°C	153
Vicat Softening Temperature B50 (50°C/h, 50N)	ISO 306	°C	141
Vicat Softening Temperature B120 (120°C/h, 50N)	ISO 306	°C	142
Thermal Conductivity	ISO 8302	W/m/K	0.20
4. Electrical Properties			
Relative Permittivity (60 Hz)	IEC 60250	–	2.7
Relative Permittivity (50 Hz)	IEC 60250	–	2.7
Relative Permittivity (1 MHz)	IEC 60250	–	2.7
Dissipation Factor (60 Hz)	IEC 60250	–	0.001
Dissipation Factor (50 Hz)	IEC 60250	–	0.001
Dissipation Factor (1 MHz)	IEC 60250	–	0.01
Volume Resistivity	IEC 60093	Ohm•cm	1 E+015
Surface Resistivity	IEC 60093	Ohm	1 E+015
Electric Strength (1mm thickness)	IEC 60243-1	kV/mm	15
Electric Strength (in Oil, 1.60mm)	IEC 60243-1	kV/mm	27
Electric Strength (in Oil, 3.20mm)	IEC 60243-1	kV/mm	17
Comp Track Index	IEC 60112	V	250
5. Flame Characteristics			
Flame Rating – UL (0.7mm) (E121562)	UL 94	class	HB
Flame Rating – UL (3.0mm) (E121562)	UL 94	class	HB
Limiting Oxygen Index (LOI)	ISO 4589-1,-2	%	25
Rel. Temp. Index Mech. w/olmp	UL 746	°C	125
Rel. Temp. Index Mech. w/Imp	UL 746	°C	125
Rel. Temp. Index Elect.	UL 746	°C	130
6. Additional Properties			
Ball Pressure Test (125 °C ± 2 °C)	IEC 60335-1	–	PASSES
Glow Wire Flammability Index (850 °C)	IEC 60695-2-12	at 1mm	PASSES

Phenolic Specifications

Products listed in this catalog that refer to material type "Phenolic" are made from "Durez 152" This is a high quality phenolic material. The specifications for this material are below:

Color	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
BK, BN	1.5	V-1	1	1	150	150	150
	3.0	V-0	0	1	160	160	160
	6.0	V-0	0	2	160	160	160
	12.7	V-0	0	2	160	160	160

Comparative Tracking Index (CTI): 3

High-Voltage Arc Tracking Rate (HVTR): 0

Dielectric Strength (kV/mm): 20

Dimensional Stability (%): 0.02

High Volt, Low Current Arc Resis (D495): 5

Volume Resistivity (10^x ohm-cm) : 10

PHENOLIC

Typical Properties		Compression				Injection Grade			
		International Units		English Units		International Units		English Units	
Physical	Specific Gravity (D792)	1.50		1.50		1.50		1.50	
	Apparent Density (D1895)	0.68	g/cc	0.68	g/cc	0.68	g/cc	0.68	g/cc
	Molding Shrinkage* (D6289)	0.006	m/m	0.006	in/in	0.0100	m/m	0.0100	in/in
	Water Absorption (D570)	0.30	%	0.30	%	0.30	%	0.30	%
Mechanical	Tensile Strength (D638)	48	Mpa	7,000	psi	62	Mpa	9,000	psi
	Flexural Strength (D790)	76	Mpa	11,000	psi	83	Mpa	12,000	psi
	Compressive Strength (D695)	207	Mpa	30,000	psi	207	Mpa	30,000	psi
	Tensile Modulus (D638)	9.6	Gpa	1.4	$x10^6$ psi	9.0	Gpa	1.3	$x10^6$ psi
	Izod Impact (D256)	16.0	J/m	0.30	ft lb/in	14.9	J/m	0.28	ft lb/in
Thermal	Deflection Temperature (D648)	191	°C	375	°F	191	°C	375	°F
	UL Flammability (UL-94) @	1.5	mm	V - 1		1.5	mm	V - 1	
	For complete UL Listing for this material refer to the UL web Site www.ul.com	3.0	mm	V - 0		3.0	mm	V - 0	
		6.0	mm	V - 0		6.0	mm	V - 0	
	UL Temperature Index (Elect) @	3.0	mm	160	°C			160	°C
Electrical	Dielectric Strength (D149)								
	Short Time	14.7	MV/m	375	V/mil	13.8	MV/m	350	V/mil
	Step by Step	12.8	MV/m	325	V/mil	10.8	MV/m	275	V/mil
	Dissipation Factor (D150)1 MHZ	.05		.05		.05		.05	
	Dielectric Constant (D150)1 MHZ	5.0		5.0		5.2		5.2	
	Volume Resistivity(ohms)(D257)	1.0	$x10^{13}$m	1.0	$x10^{12}$ cm	1.0	$x10^{13}$m	1.0	$x10^{12}$cm

Properties determined with test specimens molded at 340-350°F *Typical transfer-molded shrinkage is 0.008 in/in or m/m

Other Properties

IEC Tracking index (CTI): 190 V.

Durez 152 is Fungus resistant per Mil-I-631D and Mil-E-5272C.

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